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TEXTILE WORLD RECORD

Special Features

American and English Costs of Worsteds

Cloth Analysis

Tracing Knit Goods in the Mill

A Wool Buyer's Trip Through the West

Cotton Yarn Counts

LORD & NAGLE COMPANY BOSTON, MASS.

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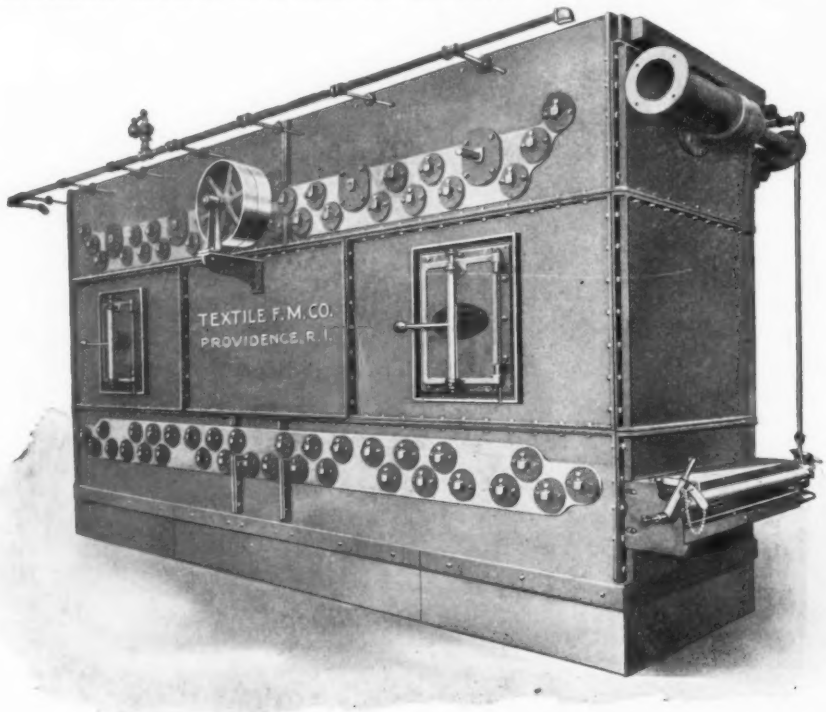

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COTTON AND SILK GOODS

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Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

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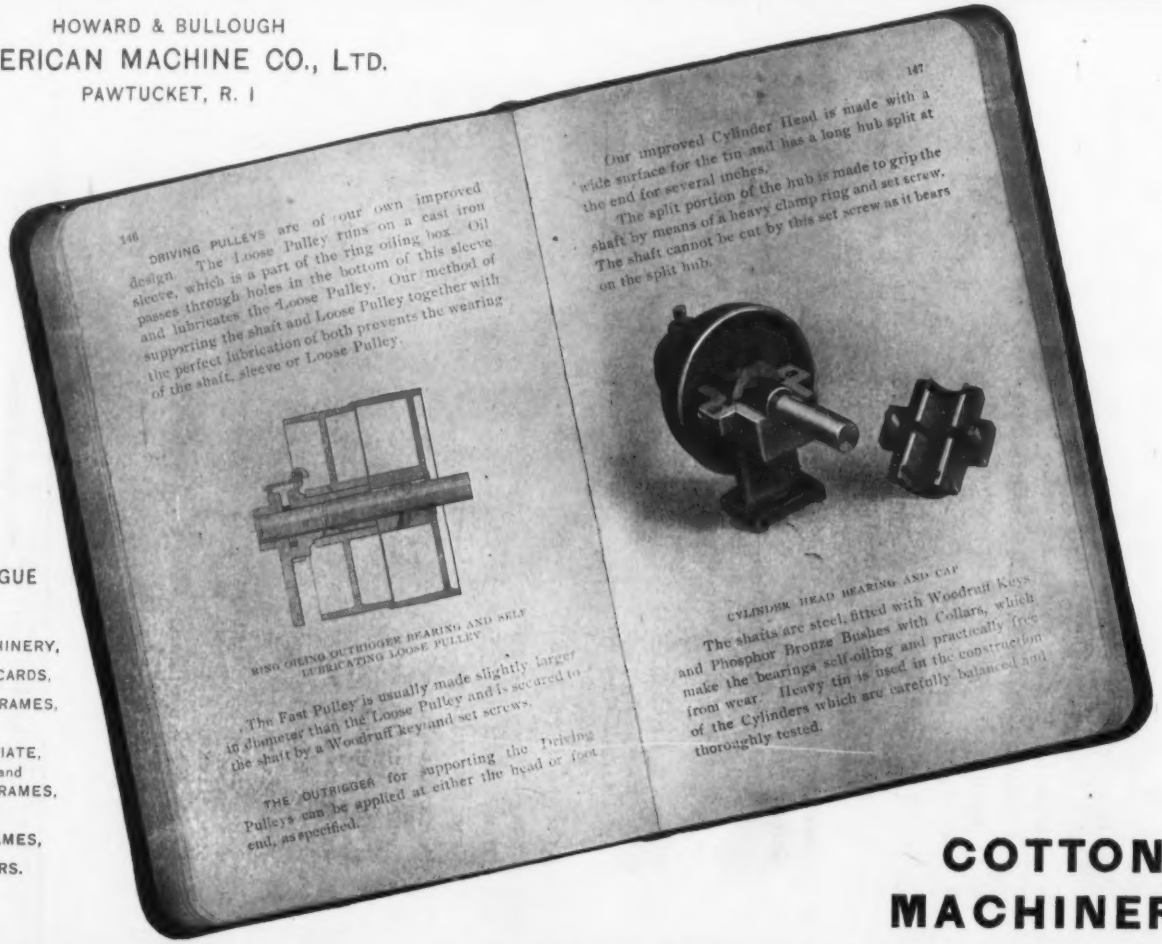
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DRIVING PULLEYS are of our own improved design. The Loose Pulley runs on a cast iron sleeve, which is a part of the ring oiling box. Oil passes through holes in the bottom of this sleeve and lubricates the Loose Pulley. Our method of supporting the shaft and Loose Pulley together with the perfect lubrication of both prevents the wearing of the shaft, sleeve or Loose Pulley.
RING OILING OUTRIGGER BEARING AND SELF LUBRICATING LOOSE PULLEY
The Fast Pulley is usually made slightly larger in diameter than the Loose Pulley and is secured to the shaft by a Woodruff key and set screws.
THE OUTRIGGER for supporting the Driving Pulleys can be applied at either the head or foot end, as specified.
147
Our improved Cylinder Head is made with a wide surface for the tin and has a long hub split at the end for several inches.
The split portion of the hub is made to grip the shaft by means of a heavy clamp ring and set screw. The shaft cannot be cut by this set screw as it bears on the split hub.
CYLINDER HEAD BEARING AND CAP
The shafts are steel, fitted with Woodruff Keys and Phosphor Bronze Bushes with Collars, which make the bearings self-oiling and practically free from wear. Heavy tin is used in the construction of the Cylinders which are carefully balanced and thoroughly tested.

COTTON MACHINERY

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TEXTILE WORLD RECORD

SEPTEMBER, 1911

Monthly Comment.

The Massachusetts Workmen's Compensation Act

At the last session of the Massachusetts legislature an act to provide compensation for industrial accidents to employes became a law. It provides for some important changes in the liability of employers who do not become subscribers to the insurance association which it creates. In order to give our readers accurate information regarding the situation under the new law, we have secured from official sources the following synopsis of the act:

Chapter 751 of the Acts of 1911 is entitled "An Act Relative to Payments to Employes for Personal Injuries Received in the Course of their Employment and to the Prevention of Such Injuries."

The law covers every employment in the commonwealth, public and private, except farm labor and domestic service. The act is divided into five parts and is voluntary in form so far as the compensation plan is concerned.

Part I is really an extension of the employers' liability law which was enacted in 1887. It provides that the following defenses shall not be available to employers who do not accept the compensation features of the act by becoming subscribers to the employers' insurance association created by the act:

1. That the employe was negligent;
2. That the injury was caused by the negligence of a fellow employe;
3. That the employe had assumed the risk of the injury.

If the employer does become a subscriber, however, or a policy holder in a "liability insurance company authorized to do business within the commonwealth," not only are these defenses restored but the present liability law is done away with so far as his employes are concerned, and the association or insurance company relieves him of liability even at common law unless he or some one in his employ "regularly entrusted with and exercising the powers of superintendence" is guilty of serious and wilful misconduct in causing the injury.

An employe of a subscriber may still claim his common law right of action, but is held to have waived it unless he gives notice at the time of his contract of hire that he intends to reserve it.

Part II provides for payments as follows:

No compensation is payable in cases where the disability does not extend beyond two weeks from the date of injury except that reasonable medical and hospital services and medicines are to be provided when needed.

In case of death dependents wholly dependent shall receive one-half the average wages of the deceased employe for 300 weeks but not less than $4 nor more than $10 a week. A wife or husband or children under 18 shall be conclusively presumed to be wholly dependent. Partial dependents, in the absence of any one wholly dependent, shall receive a part of the above amount proportioned to their dependency. If there are no dependents the expense of the last sickness and funeral, not to exceed $200, is provided.

If the employe does not die, but is totally incapacitated for work, he shall receive one-half wages but not less than $4 nor more than $10 a week, for a period not greater than 500 weeks and an amount not more than $3,000. If the employe is partially incapacitated, he shall receive one-half the reduction of his earning capacity but not more than $10 a week, nor for more than 300 weeks.

In addition to the above payments special compensation is provided for certain specified injuries such as the loss of an eye or eyes, or of other members of the body.

No compensation is payable where the injury is due to the serious and wilful misconduct of the employe himself; but, on the other hand, the amounts recoverable are doubled where the injury is caused by the serious and wilful misconduct of the employer or superintendent.

Part III provides for an industrial accident board of three members appointed by the governor, who are to have charge of the administration of the act. There is also provision here for local boards of arbitration to settle disputes and for appeal to the courts.

Part IV provides for the Massachusetts employes' insurance association, which is to be a mutual organization conducted and supported by employers subject to regulations contained in the act or imposed by the insurance commissioner.

Part V contains certain miscellaneous provisions such as the definition of terms and the date at which the act is to take effect. The part relating to the formation of the insurance association becomes effective January 1, 1912, when the governor is to appoint a board of fifteen directors to serve for one year or until their places shall be filled by directors elected by subscribers. The rest of the act takes effect July 1, 1912.

Comparative Costs of Worsteds

There appears in another part of this issue a letter from an American manufacturer of worsted goods who buys yarn and converts it into cloth. Early in July he sent us a sample of one of his fabrics and asked us to investigate the cost of this cloth made in England. The reply of our English representative, to whom the sample and question were sent is also given in this issue. As we desired to obtain a report from Bradford uninfluenced by any knowledge of the American cost of manufacturing, we did not send the figures of American cost to our representative. After his report was received we asked our manufacturer to separate his cost to correspond with the items in the English statement, and to show what the cost of his goods would be under the proposed Underwood-La Follette bill, and here are his figures:

			Per yd.
24 1/4 lbs. warp . .	@ .60	$14.55	$.231
2 3/4 " twist . .	@ .70	1.93	.031
19 lbs filling . . .	@ .50	9.50	.151
Weaving 66 yards	@ .504	3.32	.053
" Expense 1 1/2 times weaving		4.99	.079
Burling and Sewing 1 1/2 times		.99	.015
Dyeing and finishing . . .	@ .05	3.30	.052
Total for 63 yards		38.58	.612

The price for yarn in the above statement is obtained by adding 35 per cent. (the Underwood-La Follette rate) to the Bradford price, allowing for cost of importing. To facilitate comparison we give the Bradford estimate of the cost in England:

Warp	Ends	Sett.	Picks	Weft
2/32s	3110	48	56	1/24
Twist = 350 ends		65 inches in reed		

	£ s d	Per yard finished	
24 1/4 lbs. warp 19 1/2	2 3 6	($10.57)	$.168
2 3/4 lbs. twist	9 8	(2.35)	.037
19 lbs weft	1 8 6	(6.92)	.109
Weaving	3 6	(.85)	.013
Expense twice the weaving	7	(1 70)	.027
Mending	3 6	(.85)	.014
Dyeing blue	15 6	(3.77)	.060
For 63 yds. of finished cloth, 58 in. wide		$27.01	$.428

The Underwood-La Follette rate on goods was 49 per cent., and on this basis our inquirer figures his competitive status would be as follows:

Bradford cost	$.428
49 per cent duty	.21
	.638
American cost	.612
Margin in favor of America . . .	.026

This does not include any allowance for the cost of importing the goods, nor for a profit in either country. In addition to these points it should be borne in mind that the English estimate is for a more expensive process of finishing.

Government Regulation of Mill Building

The evils of unregulated cotton spinning mill building have become so serious in Lancashire that steps have been taken to correct the abuse by an Act of Parliament. The proposition is backed by the federations representing both employers and operatives, and was placed in definite form by a bill introduced in the House of Commons on Aug. 15 by Sir Arthur Haworth, member from South Manchester, whose remarks on that occasion are reported as follows:

Sir Arthur Haworth asked leave to introduce the Cotton Spinning Companies Bill, "better to regulate the formation of companies for cotton spinning." As justification of the bill Sir Arthur Haworth explained that a custom existed in Lancashire, in connection with the formation of companies for cotton spinning, that did not exist anywhere else. In other words, the great facilities for acquiring capital by means of loans, rather than by issuing shares, had brought about, after times of abnormal prosperity, a great excess of new buildings. No one wanted to restrain mill building as long as it was a legitimate kind. But mills were often erected with the money of people who had no intention whatever of taking any interest, or more than the smallest interest, in their future

working. The money that was subscribed was subscribed by architects, engineers, and others who wanted the contracts for the equipping of the mill, and they, having no further interest in the working of the mill after it had been completed, proceeded to unload their shares at the first possible or favorable opportunity. In Lancashire there was a custom whereby, in additions to loans on mortgage, which was a perfectly fair, proper, and business-like method, money could be obtained on loan from people who used the mill much as small depositors used a savings bank. Then when difficulties came, as they had come in the cases of several recently built mills, there was very little security, if any, for the loans, and disaster followed. That was the evil which the bill sought to remedy.

The proposal was that there should be a certificate from the directors to the Registrar of Companies, giving an estimate of the cost of the building and equipping of the mill, not taking into account the working capital, and the subscribed capital should not be less than that estimate; then that there should be 10 per cent. to pay on application, 15 per cent. on allotment, and another 25 per cent. within two years. That meant that 50 per cent. of the capital required would be obtained during the two years, and there would be no sale of those shares except in a case of bankruptcy or death. That would mean, also, that the shares would be held by people who were legitimately interested in cotton spinning and people who intended to carry on the working of the mill. It would put the business of mill expansion on a sounder basis than it was at present. The bill was a non-party bill. It was promoted immediately by the Federation of Master Cotton Spinners' Associations, and it had received the unanimous assent of the various associations of operatives.

While condition in Lancashire as regards mill building may be worse than elsewhere the evil exists in all countries to a greater or less extent. When business is good it is difficult to convince manufacturers that it can ever be bad again; and when business is bad it is even more difficult to make manufacturers believe that the sun of prosperity will ever shine again. This psychological characteristic accounts for the excess of new mills in good times. The Haworth bill is an attempt to provide a balance wheel which will keep the new mill construction nearer to the requirement of the trade. The Haworth proposition is of direct interest to the manufacturing industry of every count, and it is of special interest as indicating that Lancashire recognizes that her troubles have arisen not only from a shortage of cotton, but from an excessive consumption of that material by Lancashire spinning mills.

The Duty on Silk Noils

Importers of silk noils and those manufacturers who have been using silk noils in their mills received a shock last month when it was announced that silk noils, heretofore classified as silk waste and admitted free of duty under paragraph 673 of the Payne law, had been made dutiable at the rate of 35 cents a pound. This decision came in the form of the following letter from the Assistant Secretary of the Treasury:

Treasury Department, Aug. 18, 1911.

Sir: Referring to your letter of May 25, 1911, and previous correspondence in regard to the classification of silk noils, I have to advise you that after a careful consideration of this matter the department is of the opinion that silk noils, whether the noils are combed or uncombed, are properly dutiable under paragraph 396 of the tariff act, as silk partially manufactured, at the rate of 35 cents per pound, and you are accordingly directed, 30 days from the date hereof, to assess duty upon such merchandise at this rate.

Respectfully, James F. Curtis,
(84034.) Assistant Secretary.
Collector of Customs, New York.

Paragraph 396 of the present law, to which reference is made, is the same as paragraph 384 of the Dingley law, and reads as follows:

396. Silk partially manufactured from cocoons or from waste silk, and not further advanced or manufactured than carded or combed silk, 35 cents per pound.

The imports of silk waste for the past three years have been as follows:

Year ending June.	lbs.	value.
1909	1,840,191	1,069,087
1910	3,045,235	1,690,393
1911	4,122,226	2,210,020

Silk waste and silk noils have been used in increasing quantities during recent years in the manufacture of carded woolen goods. These materials offered certan advantages. Compared with wool they have been low in price. They stand the "all wool" test of boiling in a solution of caustic alkali, and thus can be freely used in goods that are sold as "all wool." Finally they possess excellent spinning qualities and, when mixed with wool, wool waste and shoddy, enable the stock to be spun into fairly fine yarn, much finer than the wool and shoddy would go without the silk. This spinning quality of

silk waste has been especially valuable because of the demand for light, thin wool fabrics.

The decision making noils dutiable will undoubtedly be contested. It will, however, have a tendency to check imports.

Our Cotton Goods Trade with the Philippines

The exports of cotton goods from the United States to the Philippines for the nine months ending March are as follows for the years 1909, 1910 and 1911:

FOR NINE MONTHS ENDING MARCH

	1909	Per cent	1910	Per cent	1911	Per cent
United Kingdom	$2,609,338	50.7	$2,478,910	42.7	$2,789,030	33.9
Japan	711,021	10.3	711,021	12.3	655,398	7.9
United States	375,854	7.3	1,131,958	19.5	3,307,231	40.2
Switzerland	343,590	6.6	297,661	5.1	314,077	3.8
Spain	342,342	6.5	335,525	5.8	355,889	4.3
Germany	331,100	6.3	310,187	5.3	396,918	4.8
China	158,550	3.8	257,606	4.4	157,165	1.9
Italy	75,831	1.5	46,979	.8	63,569	.8
Belgium	61,798	1.2	47,301	.8	54,203	.7
Others	303,366	5.8	192,674	3.3	135,128	1.7

The Payne tariff act providing for free trade between this country and the Philippines went into effect on Aug. 5, 1909. Previous to that date American cotton goods imported into the Philippines were subject to the rates of duty collected on imports from other countries, and, as shown in our October, 1909, issue the Philippine tariff rate on cotton prints was equivalent to 27 per cent. ad valorem. As the statement given above is for the nine months ending with March of each year, it follows that the exports reported from the United States for 1909 were dutiable; those for 1910 were dutiable for the first month, and admitted free for the other eight; while those reported for 1911 were all free of duty. When our cotton goods were competing on equal terms in 1909 with the goods from other countries, our exports amounted to but 7.3 per cent. of the total. The nine months ending March, 1910, was a period of preparation during which American exporters were studying the Philippine market. As a matter of fact it took several months for American exporters to understand the Philippine tariff which protected them against foreign competition in the archipelago. This delay was due in great measure to the fact that the Philippine tariff is based on the metric system of weights and measure, with which the trade in this country is not familiar.

As a result the exports of American goods for the nine months ending March, 1910, showed but a small increase, from 7.3 per cent. to 19 1/2 per cent. By the time the nine months ending March, 1911, began our exporters were evidently ready to improve the opportunity which free trade between the two countries offered, for we find our portion of the trade for that period was 40.2 per cent., placing us at the head of the list, whereas in 1909 we had occupied third place.

The National Bureau of Standards and Cotton Yarn Counts

In the letter dated July 11, 1911, from E. B. Rosa, acting director of the National Bureau of Standards, to Hon. O. W. Underwood, chairman of the Committee on Ways and Means, we find the following statement:

"In the metric system the yarn count for cotton is the number of 1000-meter hanks required to weigh one-half kilogram of 500 grams."

For years the National Bureau of Standards has been the center of a persistent agitation to make the use of the metric system compulsory in the United States. The officials of that Bureau have sought to instruct the public and the lawmakers at Washington regarding what they claimed was the perfection of this system of weights and measures, and the hopeless inferiority of our English system. It is, therefore, astonishing to find that the acting director of the Bureau of Standards does not know what the metric system is as applied to the cotton industry.

The metric system of numbering cotton yarn is not based on the number of 1000-meter hanks in one-half kilogram. It is based on the number of meters per gram or kilometers per kilogram. What Acting Director Rosa has taken for the metric system is the system used by French cotton spinners, and an explanation of its origin may not only enlighten the officials of the Bureau of Standards, but also prove useful as showing the impossibility of changing our textile weights and measures. When the metric system was promulgated on Aug. 1, 1793, by a decree signed by Danton and his associates, the French spinners ignored it and continued to use the old French pound, which was equal to 489 grams. Nearly twenty years later the government decided to use force and so in 1810 issued the following decree:

Art. 1. Beginning March 1, 1811, all spinners of cotton, linen, hemp or wool are required to reel their yarn in skeins of 1000 meters each.

Art. 2. Beginning with the same date the yarn will be marked with the number indicating the number of 1000 meter skeins in one kilogram.

Art. 3. Violation of this statute will be treated as infractions of police regulations and punished by a fine of not less than 5 francs nor more than 15 francs for the first offense; this fine may be increased for a repetition of the offense.

Still the French spinners remained obdurate, and after much wrangling and threatening, the government surrendered to the superior force of trade custom. It concluded that if the spinners would not do what they were told, it would tell the spinners to do the only thing they would do, that is, use the old French pound or its practical equivalent. It happened that this pound was within about 2 per cent. of the half-kilo, this difference being much less than the ordinary variations in yarn counts, and accordingly on May 26, 1819, the French government issued the following decree:

"All cotton yarn made in French mills shall be marked with a number indicating the number of skeins in one-half kilogram or metric pound."

That decree changed nothing, and today the will, not of the government, but of the French cotton spinners of a century ago, is supreme in French mills, a striking proof of the permanency of established weights and measures.

The Metric Yarn Congress at Paris in 1900 passed resolutions condemning this mongrel French system of numbering cotton yarn and the president of the Congress, M. Ferdinand Roy, made this appeal to the French Minister of Commerce:

"It is very desirable that the number of cotton yarn be based on the kilogram. The Committee appointed by the Congress has consulted the Chambers of Congress throughout France and all have given approval to the change. In consequence I have been authorized to request that the law of May 26, 1819, be modified so as to require for cotton yarn a system of numbering indicating the kilometers per kilogram. If you will bring about this reform France will certainly set an excellent example for other countries to follow."

All in vain. The French government of today remembers the lesson of 1811, and refuses to attempt the impossible. The French cotton trade cannot make the change, for the necessary unity of action cannot be obtained. And so this French, non-metric system endures in 1911, adding to the confusion caused by a mixture of metric units that have been forced into France and old French units that cannot be forced out.

In the light of this history the belief by the acting director of the United States Bureau of Standards that the French cotton system based on the pound is metric would be laughable if it were not so serious. That Bureau is exerting all the influence that arises from official prestige and a reputation for being "scientific," to throw our present system of weights and measures into a confusion beside which the French chaos of today will be uniformity itself. An idea of what is in store for us if the Bureau of Standards has its way is obtained from these directions for analyzing cloth, given by Acting Director Rosa in his letter to the Hon. Oscar W. Underwood:

"The Bureau of Standards used 4 inches square, and upon course and uneven fabrics prefers even larger pieces.

"After the test piece is cut out the warp and weft yarns are carefully unraveled from the fabric until a definite length is obtained; their combined weights are determined upon an analytical balance, capable of weighing to a tenth of a milligram and, if the count is desired in the English system, the number of hanks (1 hank=7 lays of 80 turns, of 1½ yards each=840 yards), which will weigh 1 pound, is computed from these values."

In order to remove all doubt as to the hopeless confusion to which the Bureau of Standards invites the textile trade we ask every reader of these lines to determine the cotton yarn count from a sample 4 inches square with the yarn weighed in milligrams.

A Wool Dealer's Trip Through the Southwest.

(By our Special Correspondent.)

The first glimpse of an Arizona sunrise was at 5.30 at Maricopa, where the traveler leaves the Pullman to make connection two hours later with the branch line to Phoenix, the Mecca of the wool buyers in January. A desert sunrise seen for the first time is a wonderful spectacle. The colorings would look impossible on canvas with their deep blood red, grading off into darkness. One of the first things to attract one's attention in this region is the giant cactus plants from eight to twenty feet high and of many curious forms. As they appear on the landscape they seem much like telegraph poles planted at random in the desert.

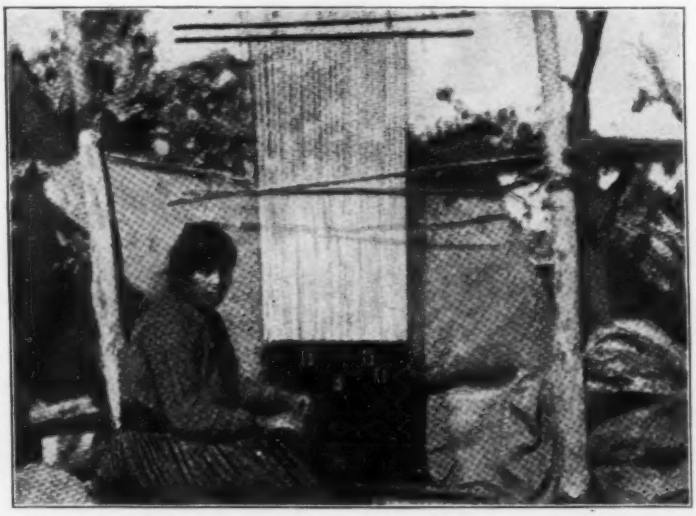
THE PETRIFIED FOREST NEAR ADAMANA, ARIZONA.

Phoenix is a city of great beauty with its gardens of tropical and semi-tropical plants. Oranges, grape fruit, lemons, figs, dates and olives can be raised in this section. The first three are cultivated on a good commercial basis. There are also several ostrich farms nearby, and a trip of great interest is a visit to one of them which has in its enclosures about two thousand of the ungainly birds. They are not very cute in appearance, but have some redeeming features to make up for their lack of personal beauty. The average weight of the ostrich eggs is about four pounds, and are said to be excellent when scrambled or in an omelette. One egg contains as much nutriment as thirty hen's eggs. In the hatching of the eggs the male bird takes his turn at setting, and stays on the nest the longest, starting at about 5 p. m. and stays until 10 a. m. the following morning, when the female bird takes her turn. They usually have ten eggs for a setting. Ostriches of all sizes and ages were to be seen stalking about, from the young chick the size of a domestic hen, to the large gen-

tleman bird standing eight feet on his claws, weighing four hundred pounds, and having a "kick" concealed about his legs that would disembowel any one it caught. The birds are kept in enclosures and to gather the eggs is a dangerous process, usually taking two men for the operation; one man to carry the egg and the other to stand off the charge of the male bird, who is always ready to fight and never misses a chance to charge on the nest robbers. The guard is armed with a large pole at the end of which is a large two-tined steel fork. This pole received the charge of the bird and the man backs away slowly, permitting the creature the kick at every step and push him outside the enclosure. One false move on the man's part would be fatal and a high price to pay for an egg. The feathers are plucked every nine months, the most valuable coming from the edge of the wings. Body feathers are never plucked. The best feathers are taken from the male bird and are worth about $100 a pound as against $60 per pound for the female feathers. The birds to be plucked are driven into a triangular space small enough to make kicking impossible, a hood placed over the head and the feathers then removed.

In this country it is rather difficult at first to keep a proper line on the time of day, as there are three kinds in daily use, sun time, Pacific time, and Santa Fe time. If one arises hurriedly at sun time he needs to be clear headed to guess whether he has ample time to make his train or needs to hurry.

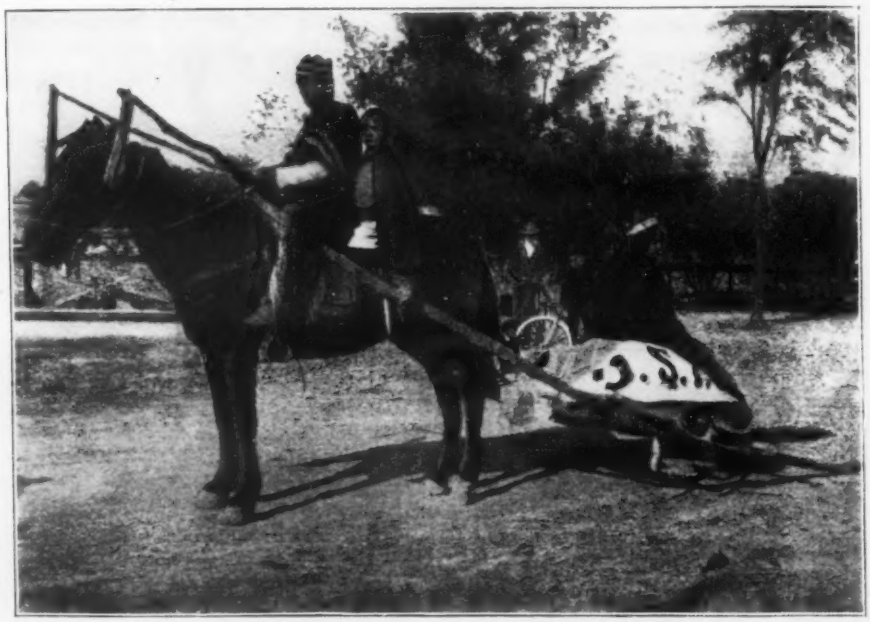
Leaving the train at Holbrook, Arizona, for a fifteen-mile drive to the petrified forest well repays one for the dusty drive across the desert to see the flinty forest of by gone ages. The trees lay where they fell ages ago and seem as hard as granite. The petrified wood takes on a high polish. From Phoenix to Cave Creek, one of the shearing points, it is forty miles by stage and it is surprising to see so many different forms of cacti. One can count at least six different forms, from the low to the giants with their grotesque arms reaching awkwardly in any direction. It would seem as if nature has some wonderful secrets to guard in this country with its impassible cacti-covered mountains peopled by rattlesnakes, scorpions, tarantula and Gila monsters. Some one discovered that the hive shaped cactus plants would make sugar candy, and this confection is now sold at the stores. It looks and tastes a little like maple sugar.



AN INDIAN BLANKET WEAVER.

The wool season of the United States opens in Phoenix during the latter part of January. About a million and a half to two

million pounds are shorn at this season. As a rule the wools sell at a high grease price as they are light in condition and of about a French combing staple, and come on the market at a time when stocks are somewhat depleted, which is one reason for their selling at times at prices above their intrinsic value. The buyers have a very easy time at this season, the work being more like a vacation trip. The railroads are very accommodating when they run close to the shearing camps, and it is no uncommon thing for them to hold up a passenger train for half an hour to permit the buyer to examine wools and then take them on to the other camps further up the line.



U. S. MAIL CARRIER, INDIAN RESERVATION.

This season the larger part of these wools went forward on consignment, growers as a rule refusing to sell at 17 to 18 cents, although some sold at this figure to cost 50 to 52 cents clean delivered and afterwards sold in Boston at about the same price. The Nevada wools come in during March and are the next to claim the buyer's attention. The wools this season opened at 12 1/2 cents and some sold as high as 15 cents or on a clean basis of 45 to 47 cents. Most of the wools fall into the hands of one concern and quite a block of them was moved at a profit. The early Utah contract wools came in unusually good condition, and at the contract price showed, and were sold at a profit. The later wools, however, cost more money and it will need some coaching to get a profit out of them.

The open sheep ranges are being cut up for settlement by farmers, and this makes the land too valuable for grazing. In many sections flock masters are being forced to reduce the size of their herds and some are going out of the business. A number of large outfits went out of business this year. This movement together with the heavy losses of 1909 and 1910 makes it certain our domestic clip will be smaller than for a number of years. In Montana alone the decrease in the value of the sheep industry is something over $3,000,000. The outcome

may be that when our tariff difficulties are settled vast quantities of wool will have to be imported, if the manufacturers are not killed off by hostile legislation. When the machinery of the country is normally employed, we do not produce within 60 per cent. of the wools we require. With an increasing population and a decreasing wool supply we will be forced to import either wool or goods.

This season the custom of selling the wools of Montana, Idaho and Oregon by sealed bids was frowned on by the dealers and many of them are said to have agreed not to buy wools in this manner in any market in the West. Three or four of the larger houses kept consistently out of sealed bidding and either contracted wool on the sheep's back or bought privately. The others tried to keep to the agreement and ludicrous attempts at getting around sealed bids by standing in line and walking up to the wool owner and whispering their bids were made. This went on until the principals advised their men not to leave bids open. This agreement was brought about to attempt to freeze out the competition of manufacturers. The dealers having good buying organization in nearly every case may feel that at important points of wool accumulation where buyers can see a large amount of wool in a few days, the competition of manufacturers could be neutralized to some extent by forcing private trading and obliging manufacturers' agents to visit the ranches to find the sheep men at their home stations. The dealers are thus able by their superior organization to work around the manufacturers. In Montana the bulk of the wools were bought on the sheep's back, although late in the season there were some sales at Miles City. In Oregon the sales were held and the bulk of the wools were sold this way. Altogether the movement to do away with sealed bids was not a success and some of the leaders in the movement have about made up their minds not to go against the tide again.

The contracted Montana wools came in as a disappointment to the contractors, the wools turning out heavier and more tender than expected, and cost the owners around 55 to 57 cents clean delivered. Later in the season, after the tariff bill passed the Senate, better wools were bought at lower prices.

Oregon wools were not as well grown as usual and sold on a clean delivered basis of 45 to 50 cents. This state was handled by experienced men and was the sanest market of the West during the season. New Mexico opened during the later part of May at 12 to 13 cents, or about 45 to 46 cents clean delivered. As the season advanced prices gradually stiffened until wools were moving at 52 to 53 cents clean delivered. In one instance a large clip sold at 56 to 57 cents clean delivered. The wools in the southeastern part of the territory were unusually well grown and of light shrink, but in other parts there was no change in the condition of former years. Up to the middle of August fully half of the clip in this territory was still in the hands of the growers, but later in the month there were some good lines moved at 12 to 14 cents.

A CACTUS FIELD.

Along the Denver & Rio Grande R. R. on

the borders of Colorado and New Mexico there are the Apache, Ute and Navajo Indian reservations. The government takes good care of its wards as is shown by the well kept buildings, schools and churches. The braves themselves are not over fond of work, but do something in the farming line, and all have horses and cattle. One brave, possibly a chief, judging from the feathers in his hat, was at work with a plow, but did not appear to like his job. At the government store at cleaning time, the agent was short of help and requested one husky buck to do some sweeping. He was most indignant at the proposition and refused to do it. He claimed it was a woman's work and wanted the mail carrier, also an Indian, to do it, as for some reason or other the Indian seemed to consider this particular native rather low in the social scale.

The Sunday school service of Indian boys and girls, ages six to fourteen years, was most interesting. The girls, who were all dressed in blue sailor suits and with red ribbons tied on their black hair, made an unusual picture. The boys were dressed in grey uniforms and the band composed of the same boys made very acceptable music on their brass instruments. Their singing of the hymns would have done credit to any church congregation, and it was a surprise to see that the accompaniments were played by an Indian girl.

The manufacture of blankets, pottery and baskets give employment to the women and young girls of the Apache and Navajo tribes. The Navajos nearly all own sheep of a low grade and the blankets made from their wool find a ready market. In the old days the shearing of the sheep was done with a sort of curved knife and they sheared only what they needed for the day's work. The carding is done on hand cards by the children. The spinning is done by hand, using an implement made of a small disc about a foot in circumference, through the center of which is a wooden shaft about a foot long, one end being a little longer than the other as it protrudes from either side of the disc. This is operated on the floor, the spinner rolling the spindle with the right hand and drawing the thread with the left. It is surprising to see what an even thread can be made by this primitive process. The yarn is wound into balls and dyed with vegetable dyes, being then ready for the weaver. The rugs are woven on hand looms, the yarn being tied on. The designs are most complicated and apparently no patterns are preserved and it looked as though they did it from memory.

At one of the small Navajo Indian trading stations near Gallop an Indian family rode up to the store on horse back with their wool clips tied to the saddles and packed in fancy colored Indian blankets. They had ridden past two trading posts to their friend's place and were prepared to do business. Their entire clip was worth $45 to this trader and he counted out this amount to them in silver dollars, as they will not take either gold or paper money. They then began to spend the money, buying only one article at a time and paying for each thing as purchased, and receiving their change from each purchase before buying the next article. Their needs this time were calico, plush, flour, coffee and sugar. The trader evidently did something of a pawn broker's business as he had quite an assortment of women's silver necklaces on which he had advanced money, besides a number of silver mounted bridles from the men. He said that sometimes he had several thousand dollars advanced on such articles and felt perfectly secure as the loans were always redeemed at the first opportunity. The traders also cash pay checks for Indians who work on the railroads, giving in exchange money of their own make and good only in trade.

There are 63 cotton spinning mills in Switzerland with a total of 1,496,689 spindles, 23 thread mills with 69,564 spindles, and 65 cotton weaving mills with 19,750 looms. Of the total, 46 spinning mills with 825,694 spindles, 16 thread mills with 33,000 spindles, and 26 weaving mills with 13,264 looms are in the Zurich consular district, the majority of them being located in the Canton of Zurich. There are in these various factories about 30,000 employes, the majority of whom are women.

AMERICAN AND ENGLISH COSTS OF WORSTEDS

Early in July we received the following letter from a prominent worsted manufacturer:

I am enclosing a sample of a cheap worsted cloth about which I spoke with you. It is about as cheap as I know how to make a piece of men's wear that will be any way acceptable in this market. Finished weight, 10 to 10 1/2 ounces, 58 inches wide.

Our manufactured cost per yard on this fabric at the present time (under the Payne law) is as follows:

$ .475 for stock
.199 for manufacturing

$ .674 total.

I am also enclosing samples of the yarn used in this cloth. The warp is 2/32s, for which we paid 70 cents, although I think the asking price today may be one or two cents higher. The filling is 1/24s and costs 60 cents.

I should be very glad if you could get me the price at which Bradford would make this piece of goods, also the price at which you could buy this grade of 2/32s and 1/24s at Bradford.

We sent the samples of yarn and cloth to our Bradford representative with the particulars given by our correspondent, except that we withheld the statement of the cost per yard for stock and manufacturing, because we wanted the statement of these items to be made by the Englishmen without their knowing what the American figures were. We advised our Bradford representative as to the weight and width of the goods, sizes and cost per pound of yarn, asking him to get a careful estimate of the cost of the cloth in Bradford. In response to this request our representative consulted a number of Bradford worsted manufacturers and engaged one of the leading public designers of Bradford to analyze and make an estimate of the cost of manufacturing the fabric in question. The designer's report is as follows:

COST OF PRODUCTION OF BLUE PATTERN ENCLOSED

Warp	Ends	Sett.	Picks	Weft
2/32s	3110	48	56	1/24
Twist = 350 ends		65 inches in reed.		

		£ s d	Per yard finished	
24 1/4 lbs. warp	1/9 1/2	2 - 3 - 6	($10.57)	$.168
2 3/4 lbs. twist	3/6	9 - 8	($ 2.35)	.037
19 lbs. weft	1/6	1 - 8 - 6	($ 6.92)	.109
Weaving		10 - 6	($ 2.55)	.040
Mending		3 - 6	($ .85)	.014
Dyeing Blue		15 6	($ 3.77)	.060
For 63 yards finished cloth 58 inches wide			$27.01	$.428

Our representative also sent us the following report:

With the letter is a sample of cloth which comes nearest in weight and appearance to cloths which have been made in Bradford for ladies' rainproof cloakings. It is a 10 to 10 1/2-ounce blue piece-dyed worsted finished 58 inches wide. Two ends of worsted and cotton twist are used to form a line stripe and the twill is broken to form a weave stripe between the lines. The striping serves a double purpose by bringing the goods out of the category of plains and breaking the surface so that a low and kempy quality of filling unsuitable for plain goods can be safely used. The yarns employed are 2/32s for warp and 1/24s for filling such as cost the American manufacturer 70 cents and 60 cents respectively. The Bradford price of 2/32s of fully better quality is 43 cents (1s 9 1/2d) from any of several spinners at the present time. A better 1/24s, sold to weave plain dress goods, has been dealt in at 35 cents within the present week, but 36 cents (1s 6d) may be taken as the commoner price and with entire safety. There remains the twist in which one end of fine cotton (1/120s presumed) is twisted round a single filling worsted thread (apparently 1/24s). Small differences do not profoundly affect the price of these fancy yarns and the exact price depends on the quantity to be spun. For a twist like this, one fancy spinner quotes 84 cents (3s 6d), and another says he would decline an offer of 72 cents.

In the matter of buying yarn to weave this fabric it is seen that the Bradford manufacturer has an advantage of 27 cents per pound of plain warp and of at least 24 cents per pound of filling. The American prices are those furnished by the manufacturer in question. The Bradford prices have been carefully verified at several hands by spinners, yarn agents and manufacturers, and are too high rather than too low.

It will be asked what the cost is of weav-

ing. If woven in Bradford on 66-inch dress-goods looms the nominally standard price payable to weavers is 2 5/8 pence (5 1/4 cents) per quarter-inch pick for 70 yards of warp. If woven on coating looms the price payable as wages to the weaver is nominally 3 3/4 pence (7 1/2 cents) per pick per quarter inch. In this sample the filling counts 14 to the quarter inch and the bare cost of weaving is alternatively 73 1/2 cents or $1.05 on this basis. The customary reckoning is to add double the weaving wage to cover all weaving expenses and this conventional process would make the manufacturer's cost $2.20 in the one case, or $3.15 in the other.

In point of fact costs not substantially different from these have been quoted to me. One manufacturer's assistant says 4s 6d ($1.08) is what his firm would pay to the weaver; another gives 84 cents as the price paid by his people. Adding the allowance for expenses the total cost of weaving, dressing, etc., becomes $3.24 in the one case, and $2.52 in the other. The apparent discrepancy is explained by the estimate that goods woven at the lower rate will need an expenditure of 84 cents per piece in mending. In the last resort the costs are thus $3.24 in the one mill and $3.36 in the other, and the difference is not one that need trouble us at this stage.

The quantities in the accompanying estimate by a public designer are more generous than in two others at hand and they can therefore be regarded as on the safe side. The effect of them is to show a total net cost in the grey of $23.24 for 70 yards of warp. Assuming this to produce 66 yards of finished cloth the cost is $.352 per yard. In further evidence of their moderation I give the terms of an offer signed by a Bradford firm of manufacturers making rainproof cloakings in large quantity. The sample was sent to them through a merchant in the regular commercial way:

"We have pleasure in quoting as under, quality to your pattern: Fancy stripe coating 58 inches finished, 10 to 10 1/2 ounces, 1s 5 1/2d ($.354) per yard." This is the equivalent of 35 cents and it includes the manufacturer's profit.

The question of dyeing and finishing remains to be discussed. In the statement of cost given above 15s 6d ($3.77) is quoted, which is lower than the figures named by a dyer and finisher handling crossbred cloths. His quotation is 9 1/2 to 10 cents per pound = $4.37 to $4.60 for a 46-pound piece. The estimated weight ignores shrinkage and, keeping to the top side, a total finished cost of $27.56 without profit is arrived at. Finished normally, 70 yards of warp should yield 63 yards of finished fabric, of which the proportionate cost would be approximately 43 cents. But the American sample is not finished normally and in all probability yielded materially more than 63 yards. A finisher guesses 66 yards as the result and the manufacturer can say how much wrong is this estimate.

It may not be out of place to say how an English finisher, not especially renowned for the mellowness of his finishes, treats cloths of this kind. They are crabbed, singed, scoured rather lightly without complete removal of soap, dyed, rinsed in cold water, tentered on a hot air machine and pressed with moderation in a hydraulic press. The slight milling which helps to improve the handle of crossbred cloths has necessarily to be omitted when dealing with a fabric of this sort—partly because the finish is required sheer, partly because the effect of milling would be to burst the yarn into loops in those thin portions of the warp where the twist stripe lies.

THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS

The 91st semi-annual meeting of this association will be held at the Equinox House, Manchester, Vt., on Wednesday, Thursday and Friday, Sept. 27th to 29th. It is expected that Gov. John A. Mead will deliver an address of welcome. Among the other speakers expected are Hon. James Wilson, Secretary of Agriculture; Prof. Henry C. Emery, chairman of the Tariff Board; Hon. John W. Weeks, of Massachusetts, and George W. Neville, president of the New York Cotton Exchange.

Papers are expected on the following subjects:

Alignment of Shafting and Machinery. Cleaning Machinery by Compressed Air. Conservation of Water Powers. Cost Methods in Cotton Manufacturing. Executive Management of the Textile Plant, and Its Relation to the Market. Illumination of Textile Mills. Introduction of Chemical Bleaching of Cotton Cloth into the United States. New Roller Leather. New York Cotton Exchange in Its Relation to Merchandizing Cotton. Organization of Carding Department in Cotton Mills. Services of the Department of Agriculture in the Improvement of Cotton. Textile Education from a Manufacturer's Standpoint. Uniform Contracts. Weaving-Shed Roofs. Work of the Tariff Board in Connection with the Cotton Industry.

A special train of of Pullman cars will leave the North Station, Boston, at 12.15 p. m. on Wednesday, September 27, via the Fitchburg division of the Boston & Maine Railroad, due to arrive at Manchester, Vt., at 6.30 p. m., whence conveyances will bring the party to the Equinox House by about 6.40 p. m. Lunch will be served in the cars to members at their seats at 1.00 p. m.

The special train leaves Boston at 12.15 p. m., will stop wherever members will join it and at Ayer, 1.15 p. m.; Fitchburg, 1.40 p. m.; Gardner, 2.15 p. m.; Greenfield, 3.20 p. m.; North Adams, 4.20 p. m.; Williamstown, 4.30 p. m.; Petersburg Junction, 4.45 p. m.; due at Manchester, Vt., 6.30 p. m.

The party using the special train will return on Saturday, September 30, leaving the Equinox House at 8.30 a. m. and Manchester railway station at 9 a. m., due in Boston at 3 p. m.

The price of tickets on the special train from Boston to Equinox House and return, covering round trip railroad fare, transfer of baggage and passenger between Manchester Station and the Equinox House, parlor car seats and lunch en route, both ways, care of baggage, board at Equinox House commencing with dinner Wednesday, Sepetmber 27, and ending after breakfast Saturday, September 30, will be $24.50 per passenger.

The transportation and hotel arrangements are in charge of the Raymond & Whitcomb Co., 306 Washington St., Boston, Mass., to whom inquiries should be directed.

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The value of silk exported from Turkey in a year averages about $10,000,000.

AN INDUSTRIAL AND EDUCATIONAL EXPOSITION

Since the amalgamation of the three large trade organizations into one, the Boston Chamber of Commerce, the matter of an industrial and educational exposition has been considered by the committees on industrial development, education, manufactures and trade extension, and having received unanimous reports from all four committees recommending that such an exposition be held, the Board of Directors voted that the Trade Extension Committee should arrange for and direct this exposition.

What is intended to be the greatest industrial and educational exposition ever held in New England will be opened in the Mechanics Building, Boston, in October, 1911, running for the entire month.

The purposes of the exposition are:

First: To promote manufacturing and commercial activity in New England.

Second: To show the people of New England the methods and extent of our manufactures and resources.

Third: To attract the attention of the whole country to New England's large and varied industries.

Fourth: To bring the employer and workman, merchant and buyer, into closer touch with manufactory and its products.

Fifth: To stimulate the people of New England, particularly the younger generation, to a realization of the dignity and possibilities of a trade, and thus promote industrial education.

Owing to the importance of the textile industry in New England the textile feature of this exposition will receive special attention, and the management are especially desirous to enlist the cooperation of all those engaged in the textile and allied industries in order to make this branch a success.

The exposition will be under the general management of Chester I. Campbell, whose executive office is at 5 Park Sq., Boston, Mass., to whom all inquiries should be made regarding spaces for exhibiting.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay of course for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

THAT FIRST OVERSEER'S POSITION

BY COLFAX

(Continued from August.)

Despite this advice, however, and his urging me to think the matter over further, I was insistent that I must accept and that I wanted to go at once, that very night, and it was finally arranged that I should do so. So here I was at last, face to face with the conditions that I had worked so hard to bring about, 20 years of age and weighing 110 lbs. Surely, as I look back now, there was a great deal of truth in what my carder friend had said about my appearance being liable to prejudice my new employers against me, and while I realized that I was facing a mighty serious situation I still had abundant confidence in myself and was determined to make the plunge.

Shortly after noon the next day, therefore, I was at the office of the mills that had wired for me and as the agent and superintendent were both out of the office, being about the mill somewhere, I had to wait possibly five minutes and I recall how very nervous I was during this wait, not through fear of not being able to make good, but that they might, upon meeting me, decide that they would not take a chance with me and chase me and my trunk out of town again. I determined, however, to put up a strenuous fight if anything of this kind developed and I remember distinctly as having in mind to convince them of my ability, that I would agree to run their darned old card-room for a month if necessary to show them that I was competent and if I failed to make good within that time I would expect no wages.

The agent was the first to meet me and it took no very close student of human nature to see that he was disappointed, but nevertheless he seemed after a bit to shape up like a good sport and inclined to make the best of a bad mess. He frankly told me that he would not have wired for me had he known that I was so young and inexperienced in the management of card rooms and that the reason that he had wired and seemed so hurried was due to the fact that they had engaged another man for the place but that at the last moment this man had wired them that he would not make the change and as they had promised to let their present man off at the end of the week (this was Friday) they felt that they ought to do so, as he had made his arrangements accordingly.

The superintendent came in in the meantime and he too was somewhat disturbed to see the heavyweight overseer that he was to handle and they told me plainly that they would expect me to give them good results from the very beginning, that they had absolutely no use for poor work and that they would not have it, adding that they had a splendid carder, who had been with them for some years, and whom they regreted very much to part with, but that on account of ill health on his part he had decided to make a change to another state, where his health might improve.

During our conversation I had answered all questions truthfully, telling them my age, experience and adding that it was my ambition to become a carder, that I felt that I was entirely competent now, that somebody would have to give me a chance to get a start and that all I asked was for a square deal and I was sure that with this I would make good.

The pay, as mentioned in the notice from the overseers' bureau and in the mill's letter to me, was $3.00 per day and as we talked about things generally, the agent incidentally asked me how much I expected in the way of wages and I explained that while I understood $3.00 was the price that this was something that did not bother me a great deal at this time and that I was willing to leave that entirely to him; he could pay me what he felt I was worth to him in comparison with

his present carder. So nothing further was said about this.

Both the agent and superintendent then accompanied me to the card-room, introduced me to the carder as his successor, and again told me in his presence what a very successful carder he was, how they regretted his departure and that if I would only do anywhere nearly as well for them that they would be contented. This was very nice stuff, of course, for the retiring carder to listen to, but it did not tend to ease my mind as to the future, but it at the same time stirred up within me a still greater determination, if such a thing was possible, to make good and to show these people that I could do as well as this man they were applauding.

They left me with the carder with the request that he show me about the room and give me any information that might aid in continuing the good work that was being done for them under his system of carding. The carder was very kind to me, showing me about and answering any questions that I cared to ask; introduced me to the second hand and the other overseers and seemed inclined to do anything that he could to aid me and I appreciated it all and he even suggested that I should come in the next day, which was Saturday and his last day there, and stay with him and this same thing was suggested by the agent and superintendent when I later called at the office, but now that I was sure that I was going to have a chance I told them that I did not feel I ought to bother the carder with my hanging about, especially on his last day when he no doubt had lots of little details to attend to and that I might perhaps better keep away and wait until Monday morning.

Eventually Monday morning came and at last I stood at the overseer's desk in a card-room where I was recognized as the "boss." Say, you old veterans, do you remember that first morning when you stood in the same position that I did on this occasion; remember the gradual gathering of the help and their sizing up of their new boss; the blowing of the whistle or ringing of the bell announcing it was time to start up, and then the gradual accumulation of noise and bustle as the machinery is being put under way and you at last realized that you were taking the step that meant so much to you, would it lead to failure or success? Remembering all these little details, do they not stand out more clearly in your mind's eye, now that your attention is called to them, than many of the heavier and more serious incidents of your career, as being the really trying moments of your mill life?

As before stated, there were eight sets of 48-inch cards with Bramwell feeds on first breakers, creels on second breakers and creels on finishers. I had never worked where creels were used on finishers, but was not very much worried but that I could handle them all right. Four of the finishers were turning off but 40 ends each, the other four were running off the regulation 48 ends and it was explained that the 40-end finishers had been so equipped to care for a line of heavy goods they used to run on several years previously, but as they had to have a spinning arrangement to correspond, it never was clear to me just where the wisdom of such an arrangement came in. However, these were the conditions and it was up to me to adapt myself to them.

On five of the eight sets a shoddy and wool mix was running, something that was being spun to about three runs and on this work these five sets had run for months and were likely to continue to do so. The other three sets were on what might be called the fancy work and were being changed more or less from one color or size to another. One of these three sets was used entirely on novelty work, such as random, snow flake, mock twist, slub twist, etc., and the range of yarn sizes varied from 3/4 runs to 9 and 10 runs.

After the machinery started, the second hand, a very decent fellow, who had worked in this mill all his life and was some years older than myself, came to talk over things with me, and told me frankly that he had hoped to have a chance at the job, that the other carder had promised to arrange it for him and he was a bit sore at not getting it, but he made it very strong to me that if I

kept him as second hand he would work the limit for me and do everything possible for my success, and when I asured him that as long as he worked for me as he had for the other man he need not worry about my bringing in any friend of my own or anybody else, and as he was married, with a small family, this relieved his mind a great deal and we worked along together very nicely.

It was part of his duties to strip cards in company with another man from the picker-room, and when they went at it I decided to follow them along and in a way get closer to the actual condition of the machines when they were taken apart for stripping. I was somewhat surprised, however, when I found that in taking the card apart they laid the fancy on the bare floor instead of in a rack of some kind as had always been the practice where I had worked, and when I inquired as to this they said that the other carder always had done it this way as there did not seem to be room enough between the first breakers and the second breaker creels to allow of a stand being used. So I told them that hereafter they would have to keep the fancies off the floor and for the moment I arranged that they should use a couple of jack spools in lieu of a rack and in the meantime I had a pair of stands made that could be kicked along from card to card as they stripped, these being just high enough to keep the fancy off the floor and were so small that they took up no room in the alley.

As fast as a card was stripped, I looked it over roughly for setting, tightness of belts, etc., and I found in every case that the stripper belts were extremely slack, so much so that I could not see that the fancy was doing its work. I found too that the constant laying of the fancy on the floor and the tendency of one man lifting his end before the other, had left the fancy in not very good condition; not only were there depressions in the wire here and there all through, but the ends particularly were in bad shape from the continual lifting of one end ahead of the other. So I began to remedy these two defects, namely, poor condition of the fancy wire and the slack stripper belts.

The second hand cautioned me about the tightening of the stripper belts, saying that the management had prohibited my predecessor from running tight belts on account of an accident that had occurred several years previously, when a belt broke and caused considerable damage by getting into the wire. However, I knew I was right and I was willing to argue the matter with the superintendent if he referred to it, which he never did, possibly because he never happened to see me tightening them.

I was fully satisfied after seeing a couple of cards stripped and noting the actual condition of them that there might be a chance of my making some improvement in them, but I was sensible enough not to try to tip everything over by making any radical changes, but contented myself with improving the condition of the fancy wire, which I did by scraping up some of the jams and then using an emery board to smooth up the whole fancy, giving the wire an upward pressure and a smoothing one, at the same motion of the emery board.

This, with the careful setting of this roll and the tightening of the stripper belts seemed to make the work look a bit better, it did to me and the second hand also remarked that there seemed some improvement. So the first day was practically spent in a very busy way getting the stripper belts and fancies into a condition nearer to what I felt they should be. Of course there were other little things to do, such as weighing roping and looking about the room generally, for I had always made it a practice, no matter what work I was doing, to keep in mind that there were other machines running and that they should not be forgotten.

On the second day I could not resist the desire to try to make some improvement if possible, so when the first card was being stripped I had them bring the workers to the grinding frame where I got them going lightly and let them run perhaps fifteen minutes to a pair and in the meantime I used the strickle and board on the cylinder and doffer and in the course of an hour I had this card put together again and in the meantime the stripping had gone along as usual.

(To be continued.)

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

Translated and Revised by Samuel S. Dale

THE SATIN WEAVE

The satin weave lacks the peculiar diagonal line of the twill, and produces a smooth, lustrous face on the cloth. Adjacent threads in regular satin weaves must never be stitched on the same filling thread. The points or stitches should be scattered as widely and as uniformly as possible. The farther they are removed from each other, the more indistinct do they become and the more attractive is the cloth.

The satin weave requires at least five shafts and can be made on any number of shafts above five. Frequently the broken 4-leaf twill weave is called a satin, but strictly speaking it is a broken twill.

The following method is used for quickly determining the order of progression for the stitchers in satin weaves: The number of threads in the pattern is divided into two unequal numbers, neither of which is divisible by the other (1 is not used). Beginning with the first pick each filling thread is stitched a certain number of threads in advance of the stitcher on the preceding pick until every warp thread in the weave has been interlaced with the filling. This number of threads is called a rising number, being one of the two numbers into which

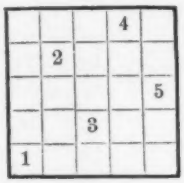


FIG. 100.

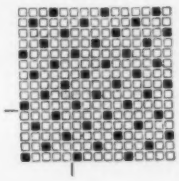


FIG. 101.

FIG. 102.

FIG. 103.

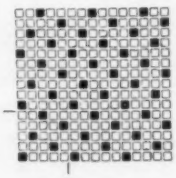
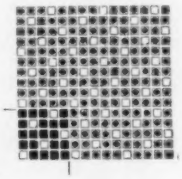


FIG. 104.



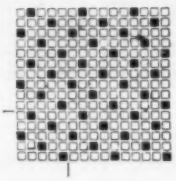


FIG. 105.

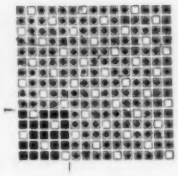


FIG. 106.

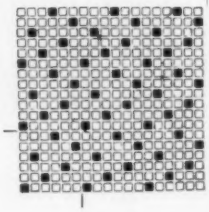


FIG. 107.

the total number of threads was divided.

For example, the number 5 is divisible into 2 and 3. Beginning with thread 1, Figs. 100 and 101, and progressing 2 warp threads to the right at each pick, the warp threads

FIG. 108.

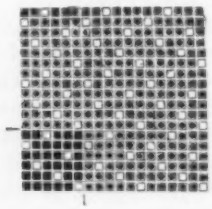


FIG. 109.

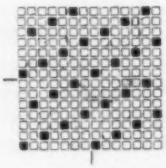
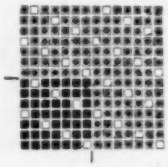


FIG. 110.



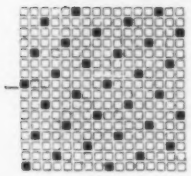


FIG. 111.

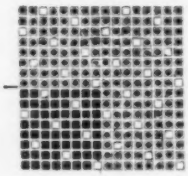


FIG. 112.

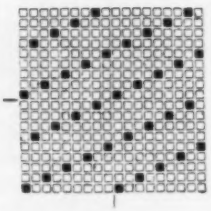


FIG. 113.

are stitched in the following order: 1, 3, 5, 2, 4. The first warp thread is stitched on the first pick; the third warp on the second pick; the fifth warp on the third pick; the second warp on the fourth pick; and the fourth warp on the fifth pick.

upward instead of sideways. Thus in the 5-leaf weave, Figs. 100 and 101, the first warp thread is stitched on the first pick; the second warp on the fourth pick; the third warp on the second pick; the fourth warp on the fifth pick; the fifth warp on the third pick, the rising number being 3. The first method, however, is the one generally used.

The 5-shaft satin is used for both warp and filling weaves. It is frequently desirable to have the twill line in a warp satin brought

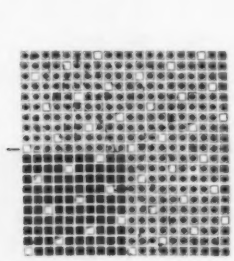


FIG. 114

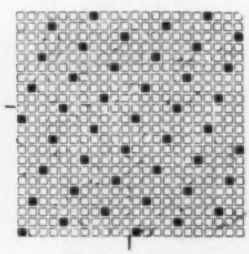


FIG 115.

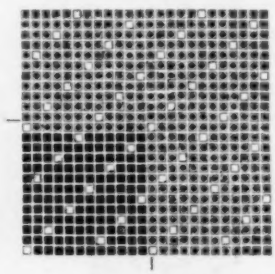


FIG. 116.

The same weave is obtained by using 3 instead of 2 as a rising number, the only difference being that the direction of the twill is reversed. This is evident because the advance of 2 threads to the right brings the stitcher 3 threads (the remaining number) to the left.

The order of progression can be carried out distinctly. This can be done by using yarn of a certain twist. For example, left twist warp with the weave at Fig. 104, will make a distinct twill running to the left, as indicated by the slanting line below the draft. If the cloth is woven with the back up the weave draft should be as shown at Fig. 105.

If it is desired to have the face of the

goods as smooth as possible, as for doeskins, the weave shown at Fig. 106 should be used with right twist warp. If the cloth is woven face up with this weave, the weave draft, Fig. 101, should be used. For the 6-shaft satin there is no regular order of progression, as 6 can be divided only into 2 and 4, or 3 and 3, none of which is suitable for a rising number. The following order is often used for the 6-shaft satin: 1, 3, 5, 2, 6, 4, Figs. 107 and 108.

For the 7-shaft satin there are two orders of interlacing available, as 7 can be divided into 2 and 5 or 3 and 4. With 2 for the riser the order is as follows: 1, 3, 5, 7, 2, 4, 6, Figs. 109 and 110.

For the 8-shaft satin there is but one order available as the only prime factors of 8 are 3 and 5. With 3 as a riser the order is as follows: 1, 4, 7, 2, 5, 8, 3, 6, Figs. 111 and 112.

For the 9-shaft satin the rising numbers are 2 and 7 or 4 and 5. With 2 as a rising number the order is 1, 3, 5, 7, 9, 2, 4, 6, 8, Fig. 113.

For the 10-shaft satin, the only division is into 3 and 7. With 3 the order is 1, 4, 7, 10, 3, 6, 9, 2, 5, 8, Fig. 114.

For the 11-shaft satin there are four divisions: 2 and 9, 3 and 8, 4 and 7, 5 and 6. With 4 the order is 1, 5, 9, 2, 6, 10, 3, 7, 11, 4, 8, Fig. 115.

FIG. 117.

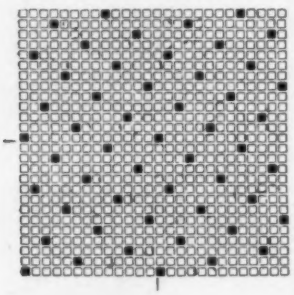
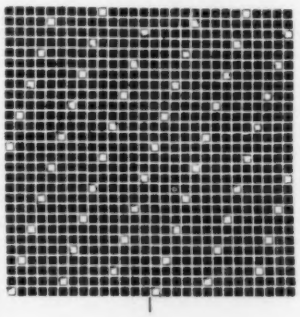


FIG. 118.



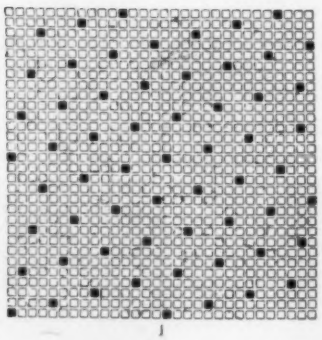


FIG. 119.

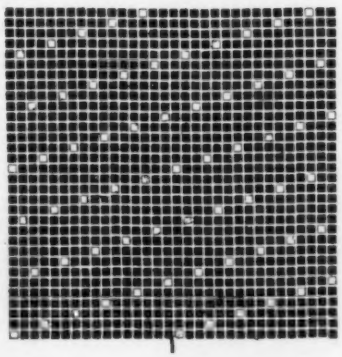


FIG. 120.

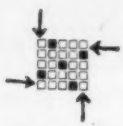


FIG. 121.

FIG. 122.

FIG. 123.

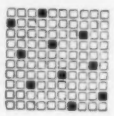


FIG. 124.

For the 12-shaft satin there is one division only: 7 and 5. With 7 the order is 1, 8, 3, 10, 5, 12, 7, 2, 9, 4, 11, 6, Fig. 116.

For the 13-shaft satin there are five divisions: 2 and 11; 3 and 10; 4 and 9; 8 and 5; 7 and 6. With 5 the order is 1, 6, 11, 3, 8, 13, 5, 10, 2, 7, 12, 4, 9, Fig. 117.

FIG. 125.

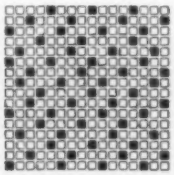


FIG. 126.

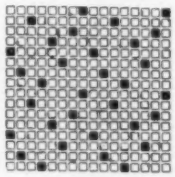
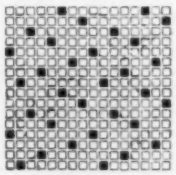


FIG. 127.



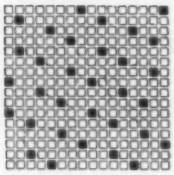


FIG. 128.

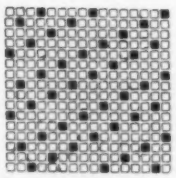


FIG. 129.

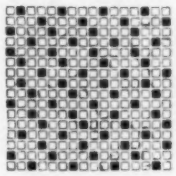


FIG. 130.

For the 14-shaft satin there are two divisions: 3 and 11; 5 and 9. With 5 the order is 1, 6, 11, 2, 7, 12, 3, 8, 13, 4, 9, 14, 5, 10, Fig. 118.

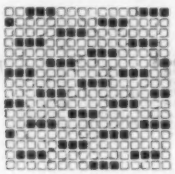


FIG. 131.

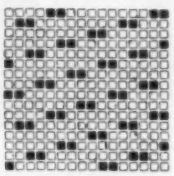


FIG. 132.

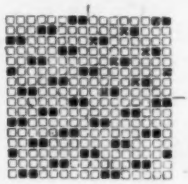


FIG. 133.

For the 15-shaft satin there are three divisions: 2 and 13; 4 and 11; 7 and 8. With 4 the order is 1, 5, 9, 13, 2, 6, 10, 14, 3, 7, 11, 15, 4, 8, 12, Fig. 119.

For the 16-shaft satin there are three divisions: 3 and 13; 5 and 11; 7 and 9. With 3 the order is 1, 4, 7, 10, 13, 16, 3, 6, 9, 12, 15, 2, 5, 8, 11, 14, Fig. 120.

A satin weave with an even number of shafts can be drafted by using as the rising number one less than half the number of shafts if the half number is even, or two less if it is an odd number. For example, to draft an 8-shaft satin, 4 less 1, or 3, is used for the riser. For a 10-shaft satin, 5 less 2, or 3, is used for the riser. For a 12-shaft satin the riser is 6 less 1, or 5. There is no advantage gained by this method of finding the riser and the first one described is decidedly the better.

A third method of drafting satin weaves, which, however, is used but little, consists in writing the numbers of the shafts consecutively in columns. Following is the method applied to an 8-shaft satin, three numbers being placed in each column:

1	4	7	2	5	8	3	6
2	5	8	3	6	1	4	7
3	6	1	4	7	2	5	8

The upper horizontal row gives the order in which the stitchers are to be placed on successive filling threads. In the example given, the first warp thread is stitched by the first pick; the fourth warp by the second pick; the seventh warp by the third pick; the second warp by the fourth pick; and so on in progressive order until every warp thread in the pattern has been stitched. The same order is given in each of the other two rows, the only difference being in the point

of commencement. This method cannot be recommended in preference to the first one given, as it is necessary first to determine the order in which the figures are to be placed under each other in a column.

For goods having warp and filling satin weaves combined to produce figured effects, the draft, to effect a good junction of the two weaves, must be so arranged that the last warp and filling threads interlace each other in the reverse order from that of the first warp and filling threads. Thus for a 5-shaft satin the order should be 4, 1, 3, 5, 2,

FIG. 134.

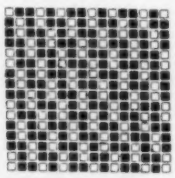


FIG. 135.

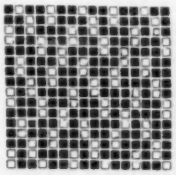
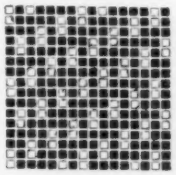


FIG. 136.



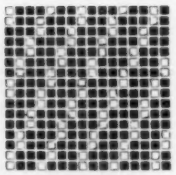


FIG. 137

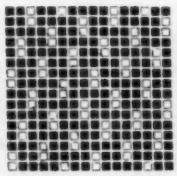


FIG. 138.

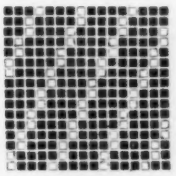


FIG. 139.

FIG. 140.

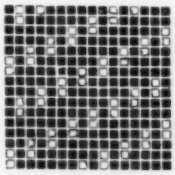


FIG. 141.

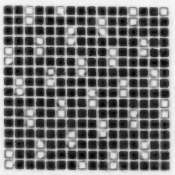
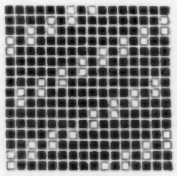


FIG 142.



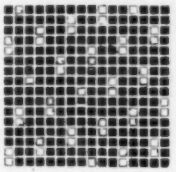


FIG. 143.

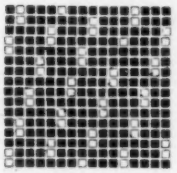


FIG. 144.

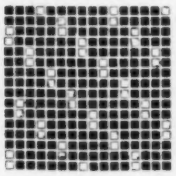


FIG. 145.

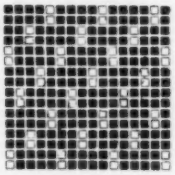


FIG. 146.

The order of stitching satin weaves, already given, is shown in tabular form as follows:

Weave	ORDER OF STITCHING
5-leaf	1 3 5 2 4
6-leaf	1 3 5 2 6 4
7-leaf	1 3 5 7 2 4 6
8-leaf	1 4 7 2 5 8 3 6
9-leaf	1 3 5 7 9 2 4 6 8
10-leaf	1 4 7 10 3 6 9 2 5 8
11-leaf	1 5 9 2 6 10 3 7 11 4 8
12-leaf	1 8 3 10 5 12 7 2 9 4 11 6
13-leaf	1 6 11 3 8 13 5 10 2 7 12 4 9
14-leaf	1 6 11 2 7 12 3 8 13 4 9 14 5 10
15-leaf	1 5 9 13 2 6 10 14 3 7 11 15 4 8 12
16-leaf	1 4 7 10 13 16 3 6 9 12 15 2 5 8 11 14

Fig. 121; 6-shaft satin, 2, 6, 4, 1, 3, 5, Fig. 122; 8-shaft satin, 6, 1, 4, 7, 2, 5, 8, 3, Fig. 123; 10-shaft satin, 7, 10, 3, 6, 9, 2, 5, 8, 1, 4, Fig. 124.

With satin weaves either the warp or the filling color predominates on the face, the filling in warp satins and the warp in filling satins being invisible, providing the set of the fabric is close enough.

IRREGULAR SATINS

Satin weaves are often used in which the stitchers or risers are irregularly distributed, Figs. 125 to 130. Fig. 125 includes 4 warp threads and 12 picks; Fig. 126, 12 warp and 6 picks; Fig. 127, 8 warp and 16 picks; Figs. 128 and 129, 8 threads each way; Fig. 130, 13 threads each way.

FIG. 147.

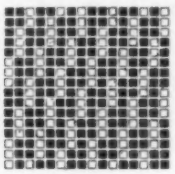


FIG. 148.

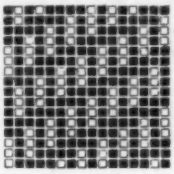
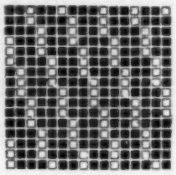
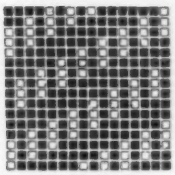
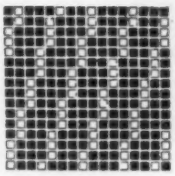
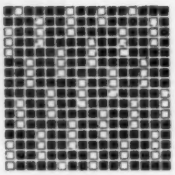


FIG. 149.









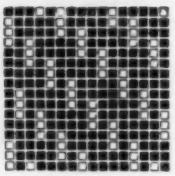


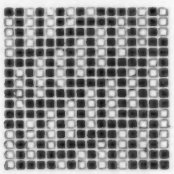
FIG. 150. FIG. 151. FIG. 152. FIG. 153.

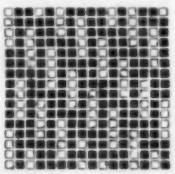
DOUBLE SATINS

If one or more stitchers are placed next to each stitcher in a satin weave, above, below or at either side, or even at a short distance from it, the weave is called a double satin, and possesses certain characteristics and advantages.

In the single satin fabrics in which the warp lies on one side and the filling on the other, the stitchers are widely separated from each other. This contributes to the smoothness and luster of the cloth, which is very desirable in certain goods. It, however, lessens the durability of the fabric and for this reason single satin weaves are better adapted for cloths in which luster and a smooth face are more desirable than wearing qualities. The durability of coatings and trouserings, cloths which are subjected to hard wear, is increased by increasing the number of stitchers.

In double filling satins 2, 3 or 4 risers are placed side by side on the same pick. In warp satins each warp thread is lowered below 2, 3 or 4 consecutive picks. In double filling satins, stitchers are inserted at the right or left of each regular stitcher; in warp satins each warp thread is lowered below the pick on either one or both sides of the single stitcher of the regular satin weave.





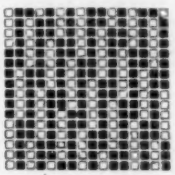


FIG. 154. FIG. 155. FIG. 156.

1. DOUBLE STITCHED FILLING SATINS

Fig. 131 is an 8-shaft double stitched filling satin. An extra stitcher is inserted at the right of each regular stitcher. Each pick floats over six warp threads, while the warp which floats on the back is woven $^{1}\!/_{4}$—$^{1}\!/_{2}$. This weave is used for goods called "English leather" by the Germans. Fig. 132 is a 10-shaft double stitched filling satin. Fig. 133 is an 11-shaft filling satin in which 2 risers have been placed at the side of the first one, bringing 3 risers together.

2. DOUBLE STITCHED WARP SATINS

Figs. 134 to 145 are double stitched warp satin weaves made by lowering each warp thread under two picks instead of one. The extra sinker is placed above the first, and on the back, is stitched more closely and the twill is made more pronounced. In Figs. 147 to 153 each warp thread passes under 3 picks; in Figs. 154 to 156, under 4 picks in succession.

FIG. 157. FIG. 158. FIG. 159. FIG. 160.

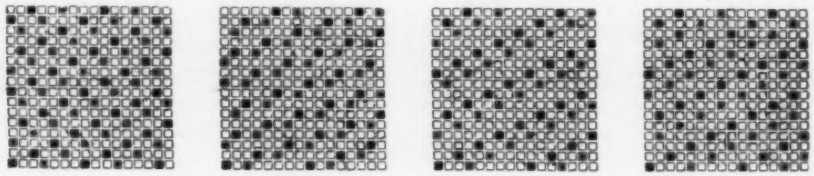
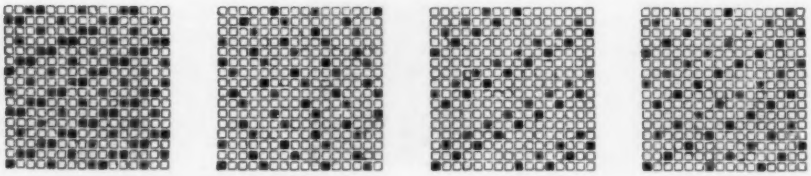


FIG. 161. FIG. 162. FIG. 163. FIG. 164



stitches the filling threads, which float on the back. These weaves are used chiefly for worsted fabrics.

To reduce the number of shafts, a satin weave with half the number of shafts is sometimes woven with two picks in a shed. Fig. 146 shows a 5-shaft satin woven in this way, and serving as a substitute for the 10-shaft double satin, Fig. 141.

By lowering each warp thread for 3, 4 or 5 picks instead of 1 or 2, the filling, floating

3. FILLING SATINS WITH SEPARATED STITCHERS

Figs. 157 to 178 are satin weaves in which the extra stitchers are placed regularly at short distances from the regular stitchers,

FIG. 165 FIG. 166. FIG. 167. FIG. 168

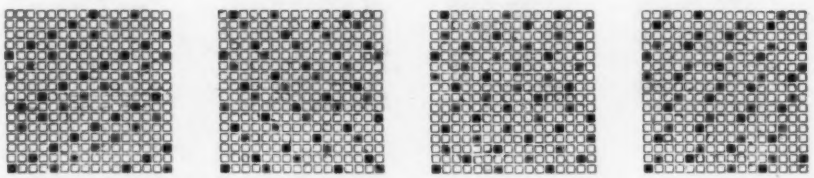


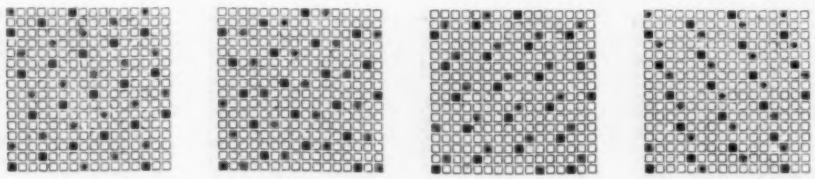
FIG. 169. FIG. 170. FIG. 171. FIG. 172.

and without regard to the tighter stitching of the warp threads floating on the back.

The right selection of a satin weave depends on the stock, size of yarn and set of the fabric. If the weave is too loose the appearance, handle and durability of the

cloth will be injured. If too tight, it will be impossible to weave in the required number of picks and the fabric will have a rough or ribbed appearance.

FIG. 173. FIG. 174. FIG. 175. FIG. 176.



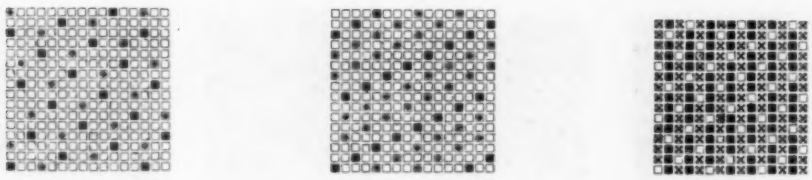


FIG. 177. FIG. 178. FIG 179.

Color effects can be obtained with satin weaves by dressing the warp 1 light, 1 dark, as shown on the 5-shaft warp satin at Fig. 179.

be readily understood that each ground weave is capable of an almost endless number of modifications. A ground weave becomes a modified or derivative weave when risers are added or removed. These alterations must, as a matter of course, be made uniformly throughout the weave pattern. Changes made in ground weaves frequently

FIG 181. FIG. 182. FIG. 183. FIG. 185.

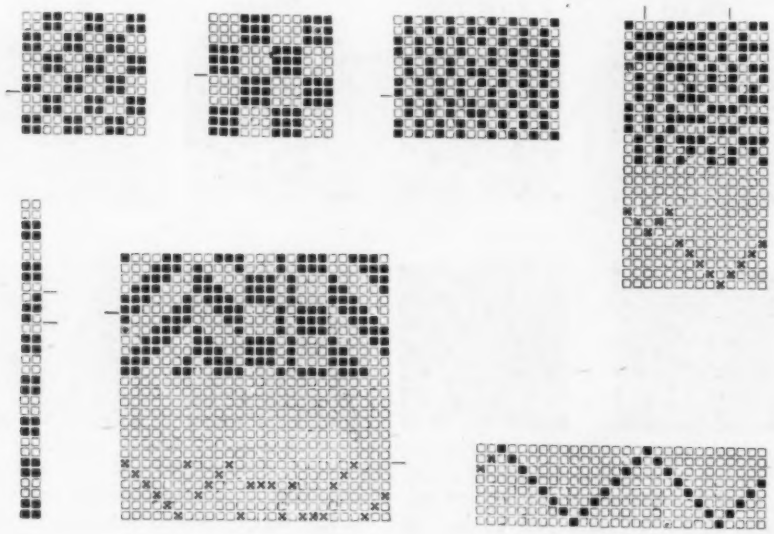


FIG. 180. FIG. 184. FIG 186.

DERIVATIVE WEAVES

The great variety of ground weaves has been shown by what has preceded. It will necessitate alterations in the drawing-in draft from a straight draft to some other form.

There can be drawn on the same shaft only those threads that interlace the filling in exactly the same order from the start to the finish of the weave. The occurrence of but one place in the draft at which one warp thread is above pick while another is below the same pick prevents the two threads from being drawn on the same shaft. Fig. 180 shows two threads which must be drawn on separate shafts owing to the variation in the order in which they interlace the two picks between the lines at the right.

It is readily seen that in Fig. 181 thread 2 may be drawn on the same shaft with thread 1, thread 4 with 3, etc. In Fig. 182 threads 2 and 3 may be drawn on the same shaft with 1; threads 5 and 6 with 4, etc. In Fig. 183 threads 3, 5 and 7 may be drawn on the same shaft with 1; threads 4, 6 and 8 with 2; threads 11, 13 and 15 with 9; also threads 12, 14 and 16 with 10. Figs. 181 and 182 each have but two different orders of intersection of the warp with the filling, consequently either can be woven with two shafts. Fig. 183 has four different orders of intersection of warp with filling, and can, therefore, be woven on four shafts with the following drawing-in draft: 1, 2, 1, 2, 1, 2, 1, 2, 3, 4, 3, 4, 3, 4, 3, 4.

As already explained, the drawing-in draft is placed either above or below the weave draft. In Fig. 184 the drawing-in draft is below the weave draft. On a line with the first warp thread a point is inserted in the first horizontal row of squares indicating that the first thread of the pattern is drawn on the first shaft. The second warp thread, if it interlaces the filling in a different order from the first, is then indicated by a point on the second horizontal row, which represents the second shaft. Each thread of the pattern is indicated successively, a new shaft being added when the thread intersects the filling differently from any of the preceding threads; if the intersection is the same as that of a preceding thread, a point is marked in the horizontal row already used for that thread. When the entire weave pattern has thus been drafted, we have the complete drawing-in draft, indicating the number of heddles on each shaft in one pattern. A drawing-in draft is shown at Fig. 184. The 26 threads in the pattern are drawn on the shaft in the following order:

Thread 1 on shaft 1
Thread 2 on shaft 2
Thread 3 on shaft 3
Thread 4 on shaft 4
Thread 5 on shaft 5
Thread 6 on shaft 6
Thread 7 on shaft 1
Thread 8 on shaft 4
Thread 9 on shaft 3
Thread 10 on shaft 2
Thread 11 on shaft 1
Thread 12 on shaft 6
Thread 13 on shaft 3
Thread 14 on shaft 3
Thread 15 on shaft 3
Thread 16 on shaft 6
Thread 17 on shaft 3
Thread 18 on shaft 6
Thread 19 on shaft 6
Thread 20 on shaft 6
Thread 21 on shaft 3
Thread 22 on shaft 2
Thread 23 on shaft 1
Thread 24 on shaft 6
Thread 25 on shaft 5
Thread 26 on shaft 4

This pattern consequently, can be woven on six shafts. The drawing-in draft is clearly shown below the weave at Fig. 184.

The drawing-in draft should be arranged so as to be readily understood and to facilitate the work of drawing-in. For example, the weave at Fig. 185 can be drawn in as follows: 1, 2, 3, 2, 1, 4, 5, 6, 7, 8, 7, 6, 5, 4, as shown below the weave draft. The draft, however, is simpler and more easily followed by both drawer-in and weaver when the order of drawing-in on the first three shafts is reversed, making the drawing-in draft as shown at Fig. 186.

(Copyrighted, 1911, by Samuel S. Dale.)

The total exports of linen goods from the United Kingdom in 1910 aggregated over $46,000,000. Of the $30,000,000 linen piece goods exported, a little over one-half was sold in the United States.

A TALK ON TEXTILE ARITHMETIC

From an address by the Editor of the Textile World Record before the Lawrence Textile School, May 25th, 1908.

Calculations for textile materials in process of manufacture relate principally to length and weight, slightly to area and practically not at all to volume. These are the conditions that simplify calculations to so great a degree in American mills. Perhaps the greatest complication in textile calculations results from the standards of yarn sizes, which are based on the relation between weight and length. Here again we are especially favored because with one exception each branch of the American textile industry has its distinctive standard:

Cotton ..... 840 yards to the pound
Worsted ..... 560 yards to the pound
Woolen ..... 1,600 yards to the pound
Linen ..... 300 yards to the pound
Silk ..... drams per 1,000 yards

The exception is the use of the linen count for woolen yarn in the Philadelphia district. The linen industry is of relatively minor importance. The worsted count is based on a length of 560 yards, which is exactly two-thirds of the cotton hank (840 yards). The two principal systems of yarn numbering are the cotton of 840 yards per pound and the woolen run of 1,600 yards per pound. Because of their extensive use and of certain useful relations they bear to each other and to textile standards in general it is advantageous to use these two systems, the cotton and the run, as the basis for our system of calculations involving yarn sizes.

Either the cotton count or the run is easily reduced to equivalents by any of the other three standards. For example: No. 1 cotton measures 840 yards to the pound. This length is equal to one and one-half times the worsted hank. No. 1 cotton is, consequently, equal to No. 1 1/2 worsted. All we need do to reduce the cotton count to a worsted basis is to increase the former by one-half. Thus:

No. 20 cotton = ... No. 30 worsted
No. 36 cotton = ... No. 54 worsted

The reverse of this operation is a reduction by one-third. Thus:

No. 30 worsted = ... No. 20 cotton
No. 48 worsted = ... No. 32 cotton

The cotton hank is 2.8 times the linen hank. Accordingly a reduction from a cotton to a linen basis consists in multiplying by 2.8. Thus:

No. 10 cotton = ... No. 28 linen
No. 30 cotton = ... No. 84 linen

The run of 1,600 yards is nearly twice the length of the cotton hank, consequently the run count is nearly one-half the cotton count. This rough reduction serves for many purposes in the mill. For calculations, however, greater accuracy is required. The cotton hank of 840 yards is equal to .525 of the woolen run.

No. 1 cotton = ... .525 run
No. 10 cotton = ... 5¼ run
No. 100 cotton = ... 52½ run

The exact run equivalent of the cotton count is in most cases readily found by a mental calculation, because it is 5 per cent. or 1/20th more than half of the cotton number. Thus:

No. 10 cotton = ... 5
Add 1/20 ..... .25

No. runs 5.25

No. 40 cotton = ... 20
Add 1/20 1

No. runs 21

No. 36 cotton = ... 18
Add 1/20 9

No. runs 18.9

A MENTAL PROCESS

This mental operation is simply two successive halvings and a division by 10. Thus in the last reduction we divide 36 by 2, and then 18 by 2, moving the decimal point in the last quotient one place to the left, then adding the two quotients together.

The convenience of the run system is due to the fact that 1600 yards to the pound is equivalent to 100 yards to the ounce. A 4 run yarn measures 4 × 1600 yards per pound

or 4 × 100 yards per ounce. A 5 run yarn thus measures 500 yards to the ounce; a 6 run, 600 yards, etc. If then we know the run size of a yarn the weight in ounces is found by a single division. A warp with 3000 ends has 3000 yards of yarn per yard of warp. If the yarn is 4 run the weight of a yard of warp is 3000 ÷ 400 = 7 1/2 ounces. The simplicity of this process makes it advisable to reduce other counts to the run basis before calculating the weight from the length and size of yarn.

The basis of the cotton count offers manifold advantages. It is equal to 840 yards per pound, 52 1/2 yards per ounce or 4.32 inches per grain. The 840 yards is divisible by 2, 3, 4, 5, 6, 7, 8 and 10, or every number from 2 to 10 inclusive except 9. This enables the hank to be divided into lengths bearing convenient relations to our weights and measures. Take for example one-seventh of the cotton hank, which is 120 yards. The cotton count, indicating the number of 840-yard lengths in 7000 grains, likewise indicates the number of 120-yard lengths in 1000 grains (1/7 lb.). If then we know the weight of 120 yards of a given yarn, we can find the cotton count (120-yard lengths per 7000 grains) by dividing 1000 by the number of grains.

Example. Find cotton count of yarn of which 120 yards weigh 25 grains. 1000 (grains) ÷ 25 (grains) = 40, Cotton No. This in turn is equal to No. 60 worsted, or 21 runs.

NATURAL SELECTION

The simplicity of textile calculations in American mills is the more remarkable because our standards of weight and measure on which they are based have apparently been adopted by chance. English speaking people have been left to use those standards they found most convenient. And as a result we find that textile operations are based on a very few convenient standards, which have been in use from the first English settlements on the Western Hemisphere and from time immemorial in the old world. The people have adopted the most convenient standards for their work, and the government has confined itself to keeping those standards uniform.

CLOTH ANALYSIS

Among the most important textile calculations are those involved in the analysis of cloth. And it is for such calculations that the cotton count is especially adapted. Suppose that we have received for analysis a sample of cotton cloth 27 inches wide. The weight of the cloth and the size of the warp and filling are found as follows:

A sample with an area of 4.32 square inches (1/300 square yard) is cut and weighed, the weight being 3.1 grains. We

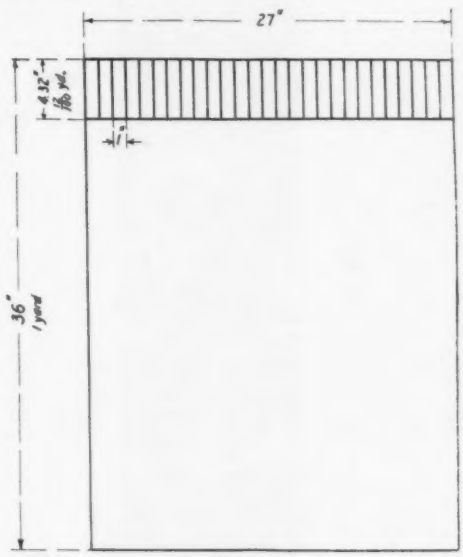


FIG. 1.

find 32 threads per inch in the warp, and 20 picks per inch in the filling.

Weight: 3.1 grains per 4.32 square inch = 3.1 ounces per yard 52 1/2 inches wide. Thus the weight per yard 52 1/2 inches wide is found without calculation, being equal in ounces to the grains in the weight of the sample. The reason is obvious:

1 grain : 437 1/2 (grains per ounce) :: 4.32 (square inches) : 1,890 (square inches per yard 52 1/2 inches wide).

The goods, however, are 27 inches wide. Then by proportion: 4.8 (grains) × 27 (inches) ÷ 52 1/2 (inches) = 1.6 ounces per yard.

But suppose the number of yards per

pound is wanted. Then 840 ÷ (3.1 grains × 27 inches) = 10 yards per pound.

The last process is thus explained:

The number of yards per pound is equal to 7,000 (grains per pound) divided by the number of grains in the weight of one yard.

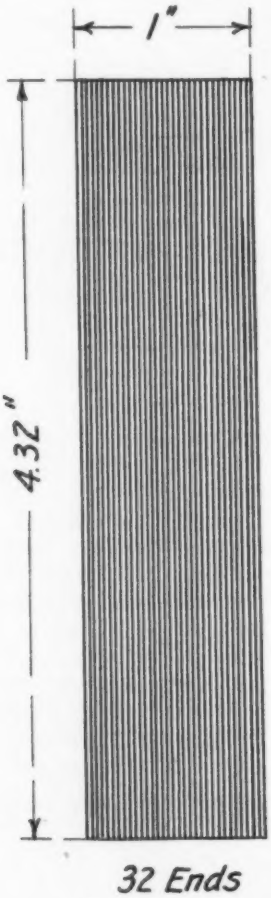


FIG. 2 FULL SIZE.

The sample is equal in area to a piece one inch wide and 12/100 yard (4.32 inches) long. If, then, we multiply the weight of the sample by the width of the cloth in inches we get the grain weight of 12/100 yard of the cloth, see Fig. 1. It is obvious that the number of yards per pound is equal to the number of 12/100-yard lengths per 12/100 pound. Accordingly dividing 840 (grains in 12/100 pound) by the grain weight of 12/100 yard gives the number of yards per pound.

We come now to the size of the yarn:

We first ravel the sample and weigh the warp and filling separately, finding the warp to weigh 1.5 grains; the filling 1.6 grains. Then:

32 (threads per inch) ÷ 1.5 (grains warp) = No. 21.3 cotton.

This operation is based on the fact that the cotton count is equal to the number of 4.32 inch lengths per grain. As the sample is equal in area to a sample 1 inch wide and 4.32 inches long, Fig. 2, there are as many 4.32 inch lengths of warp in the sample as there are warp threads per inch.

Dividing 32 (4.32 inch lengths in sample) by 1.5 (grain weight of warp) gives the number of 4.32 inch lengths per grain, which is the cotton count.

For the same reason the size of the filling, Fig. 3, is thus found:

20 (picks per inch) ÷ 1.6 (grain weight of filling) = No. 12 1/2 cotton.

MORE USEFUL RELATIONS

It is a curious fact that the area, 4.32 square inches, which, by its relation to the cotton hank, enables us to calculate the cotton count so easily, is exactly 1/300th of a square yard. This makes it possible to calculate the weight per square yard and the square yards per pound by the following straight line operation:

(3.1 grains × 300) ÷ 437.5 (grains per ounce) = 2.1 ounces per square yard. 7,000 (grains per pound) ÷ (3.1 × 300) = 7 1/2 square yards per pound.

The form, 1 inch × 4.32 inches, is used here for the sake of clearness in illustration. The particular shape of the sample is immaterial as long as the area is 4.32 square inches. A rectangular sample, 1.8 inches × 2.4 inches will be found as convenient as any.

I have now given directions for determining the size of the yarn as it lies in the finished cloth, but without making allowance for any change of size resulting from a gain or loss in length or weight after the yarn was spun. The changes in the size of yarn after spinning may be due: to a gain in weight, as when the goods are sized; to a

loss of weight, as when woolen goods shrink in weight in finishing; or to a shrinkage in the length of the yarn, as caused by take-up in weaving or by contraction of the filling after weaving. Seldom if ever is the yarn longer in the finished cloth than when spun, making it necessary to allow for an increase in the length.

The method of calculating the spun count from the finished count is illustrated by the following examples:

Ex. 1. The size of the warp as it lies in a sample of cotton cloth is 18s. The take-up of the warp is estimated to have been 10 per cent. Find spun count.

The cloth length of the yarn is 90 per cent. of the original spun length. The 18 hanks per pound is 90 per cent. of the spun length per pound. Then:

18 (hanks) ÷ 90 = 20s, spun count.

Ex. 2. The size of the warp as it lies in a sample of woolen cloth is 5 runs. It is estimated that the goods have shrunk 20 per cent. in weight by finishing. Find spun count.

A pound of the spun yarn weighs .80 pound when finished, consequently the length of .80 pound finished is equal to the length of a pound of spun yarn. A pound of yarn as it lies in the finished cloth measures 5 runs. Then:

5 (runs) × .80 = 4 runs, spun count.

Ex. 3. The size of the warp yarn as it lies in a sample of worsted cloth is 36s. It is estimated that the take-up has been 10 per cent., and that the goods have lost 20 per cent. in weight by finishing. Find spun count.

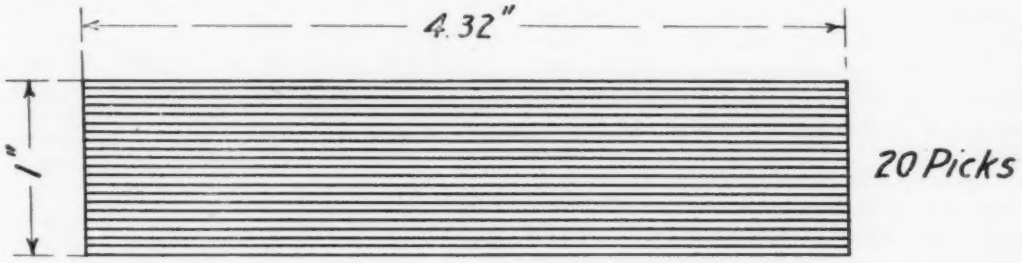


FIG. 3. FULL SIZE.

In this case we find problems 1 and 2 combined. Then as in 1:

36 (hanks) ÷ .90 = 40s.

The spun count would have been 40s if the goods had not shrunk in weight. Allowance for this loss of weight is made as in 2:

40 (hanks) × .80 = 32s, spun count.

The order of these two operations makes no difference in the final result. Thus reversing the above order we have:

36 (hanks) × .80 = 28.8s.

28.8 (hanks) ÷ .90 = 32s, spun count.

It is unnecessary to illustrate the method of making allowance for a gain in weight, as by sizing, because the size should be removed from the sample before the analysis is made.

These examples are all based on the fixed weight system of numbering yarn, that is, length per pound. The process is reversed when the sizes are indicated by the fixed length system, such as the grain count.

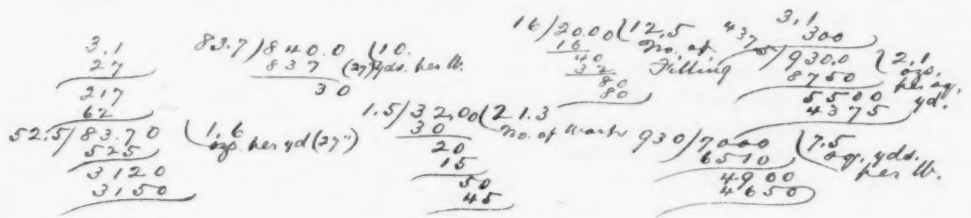


FIG. 4

WHAT IS THE MATTER WITH OUR WOOL-GROWING INDUSTRY?

Fort McKavett, Texas, Aug. 6, 1911.

Editor Textile World Record:

It would seem reasonable that an industry which has received the fostering care of the government, through our protective system, for so many years as wool has, would have been fully developed long before this, yet we are not producing more than half the requirements of our mills at the present time.

The tariff has ranged from ten to thirteen cents per pound duty nearly all the time since 1867, which has been quite sufficient to equalize the cost of production with other countries. It has been clearly shown by a thorough scientific investigation made by Prof. Wm. McMurtrie, under the auspiees of our Agricultural Department, that our country is admirably adapted to the culture of wool, and will produce any character that can be grown in any other part of the globe, yet the bald fact stares us in the face that we are not much further advanced in development than when we started after the war.

My personal experience in raising wool has extended over a period of thirty-five years and I can testify to the fact that it has been a very unprofitable undertaking. I venture to say the growers in Australia, New Zealand and Argentine Republic have received 50 per cent. more profit from their industry than we have, while under the law of supply and demand we should have received the selling value of their product, plus the duty of our tariff. What is the cause of this and can we not apply some remedy that will remove the trouble?

The growers of wool in the countries I have referred to are, as a general thing, of English extraction; they do not undertake to sell their own wool in small parcels, and in remote districts in their countries like the American growers do, but, on the contrary, they cooperate with each other, through strong corporations, which have ample capital to finance their combined holdings; and by concert of action these corporations have periodical auction sales in London and elsewhere to dispose of the product. This arrangement is perhaps as near an approach to a wool trust as it is possible to be, and has certainly proved to be a very admirable system. I think, however, that we employ a much better one in this country for handling cotton, which I believe can be applied to wool with equal facility.

You may remember I made this suggestion to the trade in 1891, when our cotton crop was only 8,000,000 bales. It has steadily increased since then, and in all probability will approach the 14,000,000 mark very closely this year, yet you have heard of no friction in the handling of cotton, and you never will as long as this system is employed. I think that has been one of the main troubles with our wool industry. There are not enough dealers in the country to create the competition that is necessary to make a healthy condition. I doubt very much if there has been any material increase in the number of wool dealers since the war of 1861-65. And I am quite sure there has not been sufficient capital employed to handle the product expeditiously, for at times it has been impossible to get even a moderate advance on consignments of wool.

I regard the "exchange system" as superior to the "London system" for several reasons. The exchange is entirely independent and cannot be interfered with by the stopping of manufacturing, which is so liable to occur at any time owing to a "strike" on the part of labor or a monetary crisis. If the manufacturers cannot operate, the wool business in London must necessarily cease until they can resume, but business on our exchanges goes on just the same. Our banks are always ready to lend their money to dealers of any product that is handled by the exchange system, because they know it can be converted into cash at any moment. I feel quite confident if wool is made a "cash crop," like cotton, or wheat, we will have no difficulty in developing a great product in a comparatively short time.

Of course prices will rule high until we have reached a point where we have a surplus, but this will not be long, and the tariff then will cease to be a tax on the consumer.

and prices will be the same as they are in London, minus the freight, as it is with wheat. The manufacturers and dealers in wool should put aside any prejudice they may have formed for dealing in futures and apply it to their business. I am quite sure the "New York Cotton Exchange" will be willing to cooperate with them and handle both cotton and wool on the same exchange.

WM. L. BLACK.

Regardless of what opinion one may have on the question of a wool exchange in the United States, it is impossible to withhold admiration for the persistency with which Col. Black advocates such an exchange as a means of developing the wool growing industry in this country. There are a number of strong objections to the proposition which are not mentioned in Col. Black's letter. First comes the lack of a uniform standard for wool. This, many believe, would make it impossible to deal in wool by the exchange system. This objection is avoided in France and Belgium by confining exchange trading in wool to wool tops, for which there are well recognized standards of quality. But even under such conditions the abuses of these exchanges have become so serious that there has been for a long time a general agitation for their suppression.

Col. Black is strangely unaware of the friction in the handling of cotton. The defects in our cotton exchange system are so serious that it has become almost certain that this system must be reformed if it is to endure in this country. The idea that the growth of our cotton crop has been due to the cotton exchange system is untenable. England has such a system, as good as, if not better than ours, and yet British colonial cotton is a negligible factor in the trade and is kept in evidence only by private and public subsidies, and by passing the hat around among the cotton mill operatives of Lancashire. The American cotton crop is made possible by reason of our climate and soil. Its development, which Col. Black measures in bales, is the result of the world demand for it. Our cotton crop would continue to increase even if every cotton exchange on earth was razed to the ground.

We venture to suggest that what American wool growing needs is an adequate, reasonable and stable protective tariff combined with a remedy for the various domestic evils that now afflict it. Cotton growing has been the particular pet of officialdom for years. Wool growing has been left largely to take care of itself.

ENGLISH NOTES

By Our Special Correspondent

The English attitude towards the tariff discussion continues to be one of mild expectancy blended with incredulity. Bradford and Huddersfield could comfortably do with new American orders for dress goods and worsteds to revive the drooping export trade, but big things are not expected until a settlement is made in one way or another. Every series of wool auctions raises the question whether Americans are going to buy and it has repeatedly been shown that wool buyers as well as cloth buyers are waiting for a termination of the uncertainty. If there is any lively sense of anticipation in the minds of our manufacturers it does not make itself conspicuous—to say the least.

Tariff Board inquiries have been continued without causing any public stir. The investigators have gone about their work quietly and in addition to particulars of costs they have obtained an idea of what is selling and how textile business is done. They moved freely about the warehouse of one large merchant-manufacturing concern, inquiring into this and that after the manner of interested guests. They appear to have been furnished with a fair number of letters of introduction, possibly from the United States consulates.

* * *

The 54-hour law of Massachusetts is quoted by those labor-unionist leaders who are seeking to reduce the hours of the British cotton industry to 48 per week. The reduction is equivalent to 13 1/2 per cent. of the nominal 55 1/2-hour week and is de-

fended on the one hand by a plea that it means no real reduction at all. Over a certain period of years the actual working time in English mills has not averaged more than 48. The prospective 54 in Massachusetts is compared with the 58 in Canada and Germany, 60 in France, 64 in Switzerland, 67 1/2 in Russia and 72 hours in Italy. It may be recalled that a law is to reduce gradually Bombay hours to 12 per day. There is no present probability of the passage of a 48-hour law in England and little enough reason for supposing that the operatives would be content with their wages if they got it.

* * *

The voluntary curtailment of hours in America and most other cotton manufacturing countries are held in vain before the federated spinners in this country. The requisite majority for organized short time cannot be obtained because a sufficient number of federated spinners have firmly decided to make no more sacrifices for the benefit of non-federated firms. Cotton has cheapened despite the refusal and as the yarn supply is all the larger it is to be supposed that somebody will benefit from the situation. The lack of unanimity among spinners has given distress to Sir Charles W. Macara, the great advocate of the short-time cure. By all appearances a period of very heavy punishment will be needed to make spinners act together in this matter in future.

* * *

The fortune left by Moe Morozoff, a Russian cotton manufacturer at Moscow, beats all available English textile records. The amount is $40,000,00, amassed in a lifetime of 84 years. They are mainly old men who leave as much as one million dollars in this country and seldom has all their money been made in the mill. Their estates are not commonly overvalued for probate and are sometimes reduced by gifts designed to avoid the successive duties. To this extent English figures may be misleading, but the million-dollar manufacturer is unequivocally rich and the five million dollar man is a Croesus. The manufacturer who bequeaths $100,000 to $200,000 has by no means done badly as textile fortunes go and if much more is left there is a general inference that he has been fortunate in his speculations. Is it one of the differences between English and American manufacturers that whereas the former speculates outside the industry the latter goes in for enlarging the mill? The typical Lancashire and Yorkshire man who has more than enough money for his business buys American rails, Canadian or Japanese bonds for the sake of steady interest and the prospect of a rise in capital value. The outside profits may go into the mill again to provide for enlargements of plant, but the general disposition is to find an outside investment for surplus savings.

* * *

It seems assured now that manufacturing costs are to bear a new addition. Under the Lloyd-George insurance bill workpeople earning less than $800 per annum are to receive $2.50 a week during sickness. The details are subject to amendment, but their general effect is to take 8 cents weekly from the employe's wages, make his employer contribute 6 cents by way of stamps and leave the State to pay two-ninths of the total cost. There are strong objections to particular points in the scheme and probably exceptions will have to be made to suit the peculiar needs of the textile industries, which employ many women who leave the mill early following on their marriage. As some divisions of the industry employ much more labor than others it follows that in proportion to profits the contributions by employers are very unequal. According to some investigations the amount will be three and four times as much in certain branches as in another. Manufacturers have to insure against workmen's compensation in case of accidents and the increase in rates of from 50 to 300 per cent. in the past five years has not made them more favorably disposed to the new contributions. The official reply to grumbling manufacturers is that they will get back all or more than all their money in the increased efficiency of

their workpeople. As usual, there are most divergent views entertained among manufacturers as to the bill, its probable consequences, its justice and injustice. What is least liked on the whole is the employers' contribution.

* * *

Previous English attempts to settle the respective advantages of electrical and mechanical driving for textile machinery have yielded principally acrimony and imputations of motives. The Textile Institute is to try afresh. A committee with a cotton manufacturer as chairman has been formed out of fourteen members of the Textile Institute and fourteen of the Institution of Electrical Engineers. The first fourteen include representatives of large machine firms, but the committee is weak in spinners. The electricians' section includes makers of staton plant and of motors, but consists chiefly of engineers in charge of city power stations. The committee is to report on the relative merits of electricity, steam and gas.

To judge from observation the electric drive makes headway in the weaving, dyeing and finishing departments, but hardly any in the spinning rooms. The economy of individual driving for machines in intermittent use is well realized and as the mains are brought near to more mills the use of current as an auxiliary power increases. In South Yorkshire power stations situated at the pitheads are turning coal into current and distributing it in the inter-urban districts at low rates. Mills inside the large towns have the municipal supply which is derived largely from the burning of refuse. The cost per unit of current varies with the situation of the mill and the quantity taken. In Manchester it is possible to buy at .7 pence ($.014), in Bradford at .75 ($.015), in Dundee at .45 pence ($.009) and in some cities not less than one penny ($.02) or over.

* * *

Ball-dyed tops apparently grow in the favor of spinners and more slubbing dyers are installing the improved type of ball machine. The absence of any disturbances of the fibers is the feature on which commission dyers dilate and the point is of advantage in spinning. Until comparatively recently this advantage was bought at the expense of imperfect penetration and uneven shades. The removal of that trouble has completed the desirability of the process and enabled dyers who could be named to take considerable amounts of work away from other dyehouses. Colored yarn spinners get their tops dyed Diamond black at 4 cents less 5 per cent. or dyed with P. V. black at 4 cents net as an absolute minimum. The operation leaves the dyer a profit of one-quarter cent per pound. At least two Yorkshire commission slubbing dyers have equipments of American, Calvert, ball and pan machines capable of dealing with 120,000 pounds of tops per week.

* * *

The ready-to-wear suit trade in this country tends decidedly to drift into fewer hands. The change does not come by way of amalgamation, but by dint of the opening of retail stores by the manufacturing clothier. The individual shopkeeper becomes less able to stand against the competition of the manufacturers whose chains of shops are always growing in length. The "factors" who bought cloth had it tailored by outsiders and sold it to the keepers of single shops, find their opportunities more and more circumscribed. This "multiple-shop" system as it is called has had most important effects on the provision and boot business, but only in ready-made clothing has it affected textiles. As yet the system has not been adapted to drapery business and the infinite variety of goods and taste does not favor development in this direction. The fact that making clothing is a more lucrative business than making cloth deters clothiers from becoming cloth manufacturers. The clothiers branch into outfitting, selling shirts, ties, collars and boots as well as suits and the established hatters and outfitters are constrained to sell clothes. Hardly a boot shop is to be found now which does not sell stockings also. But the people who take hold of the raw materials continue to be simply spinners of yarn and manufacturers of cloth, each in his own especial department. While they hew wood and draw water the clothier contrives

to make a very pretty pile out of his scores or hundreds of retail branches.

Textile schools are not all so generously dealt with as that at Bolton, the fine count and Egyptian cotton spinning town. For the third time in the school's history Dobson & Barlow are making it a present of a complete spinning plant of their latest type. The gift has a cash value of $10,000, less any depreciation due to exhibitions of the machines at the Roubaix Exposition. Half a dozen others make donations of smaller amount and it is fair to suppose that the cost will bear fruit to the donors. The arguments a municipality can find against replacing educational plant are always weighty. The second-best will do so far as the usual councillor and alderman can see, but in Bolton the machinists have ensured that the students shall be familiarized with the latest pattern of machine.

* * *

An improved hat-pad for the polishing of silk hats owes its virtue to a very simple treatment. The pad is a stuffed one of the usual cushion shape made from cotton velvet. The velvet is treated from the back with a fairly heavy dressing of melted beeswax spread on the fabric from a heated doctor-roller. The wax penetrates to the face in sufficient quantity to add materially to the luster of the silk pile of the hat. A finisher in experimenting with the French plushes used for covering silk hats has been brought to a standstill by a possibly little known peculiarity of these fabrics. The pile instead of running warp way is laid across the piece in the direction of the filling and the attempt to treat these fabrics on machines constructed to deal with continuous lengths of cloth ended badly for the silk pile.

The export of linen piece goods from the United Kingdom for the five months ending May, 1911, amounted to 85,134,100 yards, valued at $11,696,044, a decrease of 17,193,100 yards valued at $1,482,949, for the same period of 1910. The decrease to the United States alone was 17,001,800 yards, valued at $1,771,279.

AN EVENER MOTION

BY LEANDER

(Continued from August.)

The first series of tests were made using the evener motion and a very decided reduction in the percentage variation is shown. On the breaker, laps weighing 13 oz. per yard were produced while 10 oz. breaker and finisher laps were made. These laps were of an average light weight and were used because it is much easier to show a variation on light work than on heavy work. It is admitted by most mill men that it is much easier to control heavy laps, slivers and roving, than to control light laps, etc.

Twelve tests were made from each lap. Two-yard lengths were weighed in each test.

The breaker laps showed a variation of 5.5 oz. This is found to be a variation of 20.7 per cent. from the average of 26.5 oz.

The intermediate laps varied 1.5 oz. in an average of 19.75 oz., showing a variation of 7.6 per cent.

The finisher laps varied only .50 oz. with an average weight of 20.83 oz., showing a variation of 2.4 per cent. only.

This reduction in variation is obtained from two sources: From doubling four laps on the aprons of the intermediate and finisher pickers and from the action of the evener motion in these two processes. Just how much of this unevenness is overcome in the doubling and how much by the evener motion, will be shown by the figures in the following test.

TEST USING EVENER MOTION.

Breaker laps.	Int. laps.	Finisher laps.
24.5 oz.	19.5 oz.	20.5 oz.
25.0 oz.	20.5 oz.	21.0 oz.
25.0 oz.	20.5 oz.	21.0 oz.
25.5 oz.	19.5 oz.	21.0 oz.
25.5 oz.	20.0 oz.	21.0 oz.
30.0 oz.	19.5 oz.	21.0 oz.
27.5 oz.	19.5 oz.	21.0 oz.
25.5 oz.	20.0 oz.	20.5 oz.
27.5 oz.	20.0 oz.	21.0 oz.
28.5 oz.	19.0 oz.	20.5 oz.
28.5 oz.	19.5 oz.	20.5 oz.
25.0 oz.	19.5 oz.	21.0 oz.
318.0 oz.	237.0 oz.	250.0 oz.
Av. = 26.5 oz.	Av. 19.75 oz.	Av. 20.83 oz.
Heaviest 30.0 oz.	Heaviest 20.5 oz.	Heaviest 21.0 oz.
Lightest 24.5 oz.	Lightest 19.0 oz.	Lightest 20.5 oz.
% variation 20.7%	% variation 7.6%	% variation 2.4%

In figuring the draft required on the intermediate and finisher pickers, the cone belt was considered to be running on a cone diameter of 4 inches. The draft gear was then computed. In the following tests the belt was placed on a cone diameter of 4 in. and the evener motion was then plugged so that it could not operate. This was done by wedging the cone belt rack and backing off on the thumb screw on the rod, D.

Similar laps from the breaker picker that were used in the first test were also used in this second test. As the evener motion does not work, the reduction in the percentage variation is entirely due to the doubling. Twelve tests were made of two-yard lengths.

Int. laps.	Finisher laps.
19.0 oz.	21.0 oz.
20.5 oz.	21.5 oz.
20.0 oz.	21.5 oz.
19.5 oz.	20.5 oz.
19.5 oz.	20.5 oz.
21.0 oz.	20.0 oz.
21.5 oz.	20.0 oz.
20.0 oz.	20.5 oz.
19.5 oz.	21.0 oz.
20.5 oz.	21.0 oz.
20.5 oz.	20.0 oz.
19.5 oz.	20.5 oz.
241.0 oz.	248.0 oz.
Av. ..... 20.08 oz.	Av. ..... 20.66 oz.
Heaviest .... 21.5 oz.	Heaviest .... 21.5 oz.
Lightest .... 19.0 oz.	Lightest .... 20.0 oz.
Variation ... 12.4 %	Variation ... 7.2 %

The results of these tests show that, without the evener, a variation of 12.4 per cent. was found. With the evener this was further reduced, in the first tests, to 7.6 per cent. These intermediate laps, varying 12.4 per cent., were doubled on the apron of the finisher picker and the final lap, without using the evener varied 7.2 per cent.

The finished lap from the second series of tests is, therefore, practically equivalent to the intermediate lap made in the first tests. That is, they are both uneven to about the same degree. With the use of the evener we reduced the percentage variation to 2.4 per cent.. Without it the finished lap varied 7.2 per cent. This shows the value of the evener. It gives us a lap of small percentage variation to start manufacturing with, thus tending toward the production of even yarns.

In order that the motion may work most efficiently it requires careful setting and good care. It should be kept well oiled, the plates should be constantly looked after to see that they work freely and do not bind. The multiple system of levers by which the plates are connected should work freely. The cone belt should be kept fairly tight. A binder cone is provided under the one shown in the figure. This cone may be adjusted so that the belt tension can be properly regulated for large and small diameters. I have seen cone belts running so slack that when moved onto the small diameter of the driving cone they would slip. Yet they would run without slipping on larger diameters, due to the increased contact. Such a belt is giving insufficient speed when working on small diameters and produces a very uneven lap.

There is one more point which is very important, but which is very often overlooked. That is the adjustment of the fulcrum on the connecting lever. It can be seen that the resultant movement of the cone belt can be greatly varied with the same amount of upward pressure applied at the point, E, on the connecting lever. This can be done by changing the adjustable fulcrum. The method of determining the proper position of the fulcrum is as follows:

The breaker lap used in the tests averaged 13 1/4 oz. per yard. One of these laps was run under the plates and the resultant rise of the pin, C, noted. It was found to be 1/16 in. Then two, three and four laps were fed and it was found that each lap increased the rise of the pin, C, 1/16 in., giving a total rise of 1/4 in.

The draft gear used to produce a 10 oz. intermediate lap was calculated with the belt running on a cone diameter of 4 in. The weight of the lap was determined and found to be 10 oz. If one of the laps fed at the back of the picker should be removed it would cause the pin, C, to drop 1/16 in., dropping the connecting lever 1/16 in. at the point, E. As we are now only feeding 3 laps, or 3/4 of the normal weight, we must feed it at an increased speed to compensate for the loss of the fourth lap. As we are only running 3/4 of the normal weight we must feed it 4/3 as fast in order to have the same weight entering as normally.

The cone belt normally runs on a 4 in. cone diameter. The speed must be increased 4/3 and this means that the cone belt must work on a 3 in. cone diameter. This would call for a certain length of movement to the left of the cone belt rack. We will now determine how much this must be. The cone is of the straight faced variety, 14 in. long, 1 3/8 in. small diameter and 5 in. large diameter. Being straight faced, the increase in diameter for each inch of length will be constant. The increase is diameter is equal to: 5.00 — 1.375 = 3.625 in. The length of the cone is 14 in., and the increase in diameter or decrease in diameter for each inch of length would equal (3.625 ÷ 14) .25875 in. That is, a point 1 in. from another point would show a difference in diameter of .25875 in. In moving the cone belt from a 4 in. diameter to a 3 in. diameter it would be necessary to have the belt more horizontally a distance equal to (1 ÷ .25875) 3.86 in.

This means to move the cone belt 3.86 in. it would run on a diameter 1 in. greater or smaller than the original diameter, depending on the way it is moved. The problem now becomes one for determining what the distance, X, from the point, E, on the connecting lever to the adjustable fulcrum, must be, to move the cone belt 3.86 in. with a drop of 1/16 in. at the point, E.

A movement of the cone belt of 3.86 in. towards the small end of the cone would require a movement of the cone belt rack of a like amount. The rack gear engages with the quadrant working on a radius of 12 in. from the center to the pitch line diameter. Fastened to the quadrant is the spur gear meshing with the rack on the end of the rod, D. This spur gear has a working radius of 15/16 in. from the center to the pitch line diameter. The quadrant and rack really work as a lever pivoted at the center of the quadrant. The quadrant arm is 12 in. long and its outer end we move 3.86 in. to the left. The spur gear arm is 15/16 in. long and we must now determine the amount the end of this arm will move down when the quadrant arm moves 3.86 in. to the left.

This would be found as follows: 15/16 ÷ 12 = 15/192 × 3.86 = .301 in.

Then the rod, D, would drop .301 in., and the outer end of the connecting lever would drop .301 in. We have now found that to move the cone belt 3.86 in. towards the small end of the cone we must drop the outer end of the connecting lever .30 in. The point, E, drops 1/16 in., or .0625 in. This means that the distance from the fulcrum to the outer end of the connecting lever is as much greater than X as .301 in. is greater than .0625 in. The distance X would be: (27 + X): X = .301 : .0625. X = 7.0 in.

To move the cone belt from a 4 in. diameter to a 3 in. diameter with a drop of 1/16 in. at the point, E, we should have to set the adjustable fulcrum 7 in. from the point E.

The above calculations are, of course, made with the belt running on a 4 in. cone diameter. This is well up towards the large end of the cone and exception may be taken to this by some men. The chances, however, of the lap running light and heavy are even, and the additional chance of a lap running out would tend to throw the balance in favor of the chances of a light running lap entering. Thus it would seem that the idea of running the belt on a 4 in. cone was justifiable and worthy of consideration.

It has, in a large number of mills, been the custom to run the evener belt about midway of the cone or on a cone diameter of say 3 1/4 in. Under these conditions, if one lap was removed we would have to move the cone belt to a diameter which would feed the laps 4/3 as fast or to a diameter equal to (3/4 × 3.25) 2.43 in.

The cone belt is working on a diameter only .82 in. smaller than it runs on when 4 laps are on the apron. This would require moving the cone belt only 3.13 in. instead of 3.86 in. as in the first case. This would call for a readjustment of the adjustable fulcrum and the point at which it should be set can be determined as in the first case.

The best results are obtained by weighing each finisher lap. Those which vary more than 1/2 a pound from the standard should be run over. Slight changes in the weight of the lap can be obtained by adjusting the thumb screw on the upper end of the rod, D. One full turn down will decrease the weight per yard about 1 oz.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

THE PRICE OF NOILS

Editor Textile World Record:

Please give me a statement of the comparative prices for noils in the United States and England at the present time. I have tried to follow the quotations in your Bradford market report, but am not familiar with the English grade numbers given there and the corresponding American grades. Skowhegan (1933).

We referred this question to our correspondent in Bradford and asked him to send us samples of the noils on which he had been quoting prices in his report of the Bradford market. He sent us six samples of noils with Bradford prices as follows:

44s, 8 1/2d (17 cents).
44s burry, 8 1/2d (17 cents).
46s, 8 3/4d (17 1/2 cents).
60s Holden combined, 16d (32 cents).
60s short, burry, 13d (26 cents).
60s cleaner, 14 1/2d (29 cents).

These samples can be seen at our Boston office. Parts of them were sent to "Skowhegan" and his comments which follow are of especial interest as showing the relative conditions prevailing in the English and American noil markets:

Editor Textile World Record:

I have examined the samples of noils. I bought a noil the other day, a car-load lot, almost identical to the sample which you mark 44s (17 cents) for which I paid 28 cents per pound Boston. I bought some other noils very similar to the 46s at 29 cents per pound Philadelphia. These are the two coarser grades. The burry samples of 44s and 60s don't look very good to me at any price. I should say the burry 44s could be bought on today's market or an equal grade with an equal amount of dirt and burrs at not over 27 cents per pound. When we get to the finer grades like your sample of 60s, our prices seem to be much nearer to the English prices. In the coarser grades from 40 to 46 there seems to be a difference of anywhere from 10 to 12 cents per pound between the English prices and our own prices for identical grades, which practically means they are about 60 per cent. higher on this side than abroad. It happens at the present time, as you probably know, that fine wools and fine noils are relatively cheaper than the coarser grades. We have not bought anything quite as fine as the 60s of which you send samples from 26 to 32 cents per pound, but the other day we bought a car load of noils just a trifle coarser than the sample which you have marked 60s cleaner and quoted by you at 29 cents, and we paid 31 cents per pound for them, or only 2 cents per pound more than is asked for the 60s which you quote at 29 cents. It is evident to us from these samples that conditions in the English market are just the reverse from what they are here in regard to finer noils. Evidently the finer noils over there are relatively higher than the coarser noils in price. On this basis we would say that the sample of 60s which you sent us, making an allowance for the slight difference in the fineness between our stuff and this lot, would probably cost us in the neighborhood of 34 cents per pound, or practically 5 cents per pound higher than your Bradford 60s quoted at 29 cents. The lot we bought is what we would call a high 3/8 blood, while the sample of Bradford 60s looks to us to be about a 1/2 blood or a trifle finer.

The sample you have marked 44s would be regarded as a low 1/4 blood, while the 46s might be regarded as an ordinary 1/4 blood. We should judge that 1/4 blood noils on today's market are about 50 to 60 per cent. higher in this country than in England, allowing nothing for freight. When we come into the high 3/8 to 1/2 and full bloods, owing to the fact there is not much demand for those finer grades in this country at the present time, the difference in price is only about 5 cents per pound, or say 20 per cent. higher than in England. Skowhegan.

CAUSTIC SODA

Editor Textile World Record:

I am very much interested in a book on the chemistry of sizing. This book states that caustic soda used in connection with potato starch will not hurt any kind of goods. What I want to know is, will it hurt goods where there is a cotton warp and silk filling? These goods are finished with a peroxide bleach, instead of a lime bleach.
Worcester (1900).

It all depends upon the amount of excess of caustic soda remaining in the finishing compound. A certain amount of caustic soda is necessary to cause the complete breaking up of the starch granules, and any excess of caustic soda will of necessity have

a destructive action upon any animal fiber in the fabric, such as silk.

As the composition of the compound is not given it is difficult to answer specifically whether the amount of caustic soda present is injurious. We would prefer to make use of a mixture made without caustic soda.

Beta Naphthol.

CLOTH ANALYSIS

Editor Textile World Record:

Enclosed is a sample of cloth and I would like to have you inform me who can analyze this fabric, giving us the exact specifications as to the weave and counts of yarns in warp and filling.

Elgin (1936).

"Elgin" can analyze the cloth himself and in that case would be much better satisfied than if he relied on some outsider to do it for him. Some years ago the editor of this magazine explained before the Lawrence Textile School an original method of determining the count of yarn in a fabric and the weight of the cloth per yard. The explanation will be found in another part of this issue with additional matter explaining the method of calculating the spun count from the finished count. This system of cloth analysis is so simple that it has been called the straight-line method. It enables any person of intelligence, although having no special familiarity with textile operations, not only to determine the yarn counts in a fabric and weight of the cloth, but to understand the reason for each step in the process.

BRANDING HORSE BLANKETS

Editor Textile World Record:

We are enclosing a piece of duck with our trademark impression on it. These ducks we use for sewing on our horse blankets in connection with the straps. What we desire is a method to make this impression fast on the duck, or to get in touch with mills who could supply us with our trademark woven in the duck.

Porter (1894).

The sample label sent has been marked apparently by a transfer process and is in gilt upon a black ground. While very satisfactory for many other purposes this method of trade-marking does not seem so well suited for long wear on articles which suffer such rough treatment as horse-clothing. If "Porter" wants to make his own labels he might have a stencil cut and apply a gold paint that has been prepared in a celluloid varnish. There are such paints obtainable in the English market and they possess distinct advantage over gold paint made with gums or oil varnish. The celluloid attaches itself more firmly to the fabric and it provides a glaze or coating over the gold powder which enhances its brilliancy and serves to prevent tarnishing. The simplest plan is to buy a small quantity and experiment, but if none is procurable a mixture might be prepared on these lines: Dissolve clean scrap celluloid in a mixture of three parts acetone to one part amyl acetate and add bronze powder of fine or middling quality as required.

Regent.

MONTHLY REPORTS FOR A COTTON YARN MILL

Editor Textile World Record:

I would like to obtain a blank form for making monthly reports for a cotton yarn mill, to show the product and cost of labor, supplies and general expenses.

Kilby (1922).

It is not necessary to use more than three forms for determining the cost of production in a yarn mill, although some systems call for more than this number. In using three forms, the first should include all the expenses incurred in putting the cotton into roving, and should be made out by the overseer of carding. This should include the cost of supplies used or received during the month. The second should be the same as the first except that it applies to the spinning room. The third should include all fixed charges for the month, such as salaries of officers and office force, fuel, water rents, if any, outside and general yard help, taxes, insurance, etc.

The forms illustrated here can be varied and enlarged to meet special requirements. Only one has been filled out.

CARD ROOM

Cost per Pound of Fine Roving for Month Ending 1911

Number of roving	2.60
Number of spindles run	1,350
Pounds of roving produced	30,020

Wages

Opening and picking	30.80
Carding	42.03
Drawing	27.60
Slubber	26.72
Five frames	75.00
General room expenses	48.60
Cost of all supplies received during month	
Cost of cotton used	
Total expenses (wages)	$250.75

Cost per pound, $0.00835.

The manufacturing cost is obtained by deducting the cost of the cotton. The intermediate fly frames cost is not brought forward, as there would ordinarily be only two processes of fly frames in making roving of the given size. The cost items of cotton and supplies are omitted, so that the form may show only the actual manufacturing costs.

SPINNING ROOM

Cost per Pound of Yarn Made for Month Ending 1911

Number of spindles run	.....
Size of yarn made	.....
Pounds spun	.....

Wages

Doffers	.....
Spinners	.....
General room expense	.....
Supplies received	.....
Total expense	.....
Cost per pound	.....

General Expenses for Month Ending 1911

Officers' salaries	.....
Office force	.....
Taxes and insurance	.....
Fuel	.....
Wages for watchman, fireman, engineer, etc.	.....
Yard and outside force	.....
Other expenses	.....
Total expenses	.....
Pounds of yarn produced	.....
Cost per pound	.....

The total cost of yarn would be the costs as taken from the three sheets and based on the total amount of yarn produced.

Steuben.

SOUTHERN HELP

Editor Textile World Record:

I would like to make reply to "Harper" in regard to the Southern help. While I am not prejudiced in favor of the South and some of their methods, yet I will say that the best help I ever saw was in a Southern mill of which I was superintendent. On ladies' or misses' ribbon hose of 280 needles, footed on 144 needle cylinder, there were girls who would do their own topping, run two knitters and get off 19 dozen per day of 10 1/2 hours. Also on size seven, 144 needle top and 108 needle footer, they ran two knitters and did their own topping and got off 25 dozen per day. I have never been in a Northern mill that could boast of such productions.

Cipango.

FINISHING CROCHET THREAD

Editor Textile World Record:

The enclosed sample is a bleached thread yarn made from staple cotton. I would like to have you advise me how this is finished.

Finisher (1901).

The thread in question is similar to that sold for crochet purposes in this country and its treatment in finishing is identical with that of sewing-thread up to the point at which the polishing process is reached. The thread is not brushed or polished.

After being doubled, the thread is wound upon warper's bobbins and passed through a chaining and linking machine, which forms the ends into a chain and links the chain together at intervals. Held together in this way the chain is boiled for four to six hours along with caustic soda in a vomiter boiler, is steeped in plain water and then washed. The chain passes over winches into the bleaching kier and is steeped for two hours or so in a solution of bleaching powder and water. The thread is well washed after the bleaching liquor has been pumped out and dilute sulphuric acid is pumped in. The thread is left in the souring solution for half an hour

and is washed in the kier for a similar length of time. In thread of tight twist the bleaching process can be repeated with advantage to the resulting white. After coming from the kier the chain receives a further thorough wash in the washing machine and is run through the dumping machine in a solution of hot soap and ultramarine. The thread is dried in the hydro-extractor and is finished ultimately by sizing in a weak solution of paraffin wax and starch and dried by passing under and over steam-heated cylinders. Regent.

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THE BELGIUM SYSTEM OF WOOLEN CARDING

Editor Textile World Record:

What is the Belgium system of woolen carding? How does it differ from the system generally employed in American Mills? Geister (1932).

We referred this question to a correspondent who is familiar with the Belgium system and he replies as follows:

I have not written sooner on the Belgium matter simply because it has been so "Belgium" hot that I did not feel disposed to write. However regarding the Belgium system of carding, I wish to say, it is a known fact that a great deal of fine short noils and waste from England find their way over to Belgium to be converted into fine spun, beautiful yarn running from 7 to 9 runs and reshipped to England. Europe is noted for making fine shoddy and yarns. They have the system down to such a nicety that a high class of goods is a result. The Belgium system has not grown in the United States simply because it requires skilled help to run the machinery. There are only a few mills in this country that use the system.

Like our own woolen cards, the Belgium system has three operations, namely, first and second breaker and finisher. On account of the fine, short stock used, the cards are covered with hoods to keep in the fly. Unlike our own first breaker in the woolen system with its doffer and side creel to a bobbin, the first machine in Belgium makes laps or rolls that are fed to the second machine, the object being to give a more perfect blending of the stock, especially in mixtures. The second machine resembles our second breaker, but when the stock reaches the doffer it is combed off and runs on a railroad back of the third machine or finisher. There is a traverse motion going back and forth the width of the apron.

The stock comes out of the front of the finisher in a thin web, and is subdivided into threads—passing through the rub aprons—and then to the spools. Narrow leather belts divide the sliver and there are four spools filling at a time from the front end of the machine instead of only two as is the case of the ordinary finisher or condenser. The belts dividing the ends are very narrow, about 1/4 inch wide, with 240 ends coming from a 60-inch card onto four spools. The Belgium system is noted for its using very short and very fine stock. It is not adapted for coarse stock. The construction of the finisher is complicated. The greatest care has to be taken in setting the motion, and if the man in charge does not understand the machine there is endless trouble for him. The workers and strippers on all the machines are covered. Schwartzwald.

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DETECTION OF COTTON AND LINEN

Editor Textile World Record:

How can linen be detected in cotton goods? Sumner (1919).

The most positive means to detect linen in the presence of cotton is by means of the microscope; but without this instrument other tests must be applied. The most important are the following:

1. Soak a small piece of the goods in a few drops of a 10 per cent. sulphate of copper solution for ten minutes, remove and rinse well, and immerse in a 10 per cent. solution of yellow prussiate of potash, when, if linen is present it will be colored copper-red, while the cotton remains uncolored.

2. Immersion in a dilute solution of methylene blue, linen will be colored a deeper blue than the cotton.

3. Immersion in a dilute solution of safranine, linen will be colored deeper than the cotton.

4. Immerse a small clipping in a solution of alcoholic fuchsine for one minute, remove, rinse, and immerse in concentrated ammonia, the linen fiber becomes rose red while the cotton fiber is white.

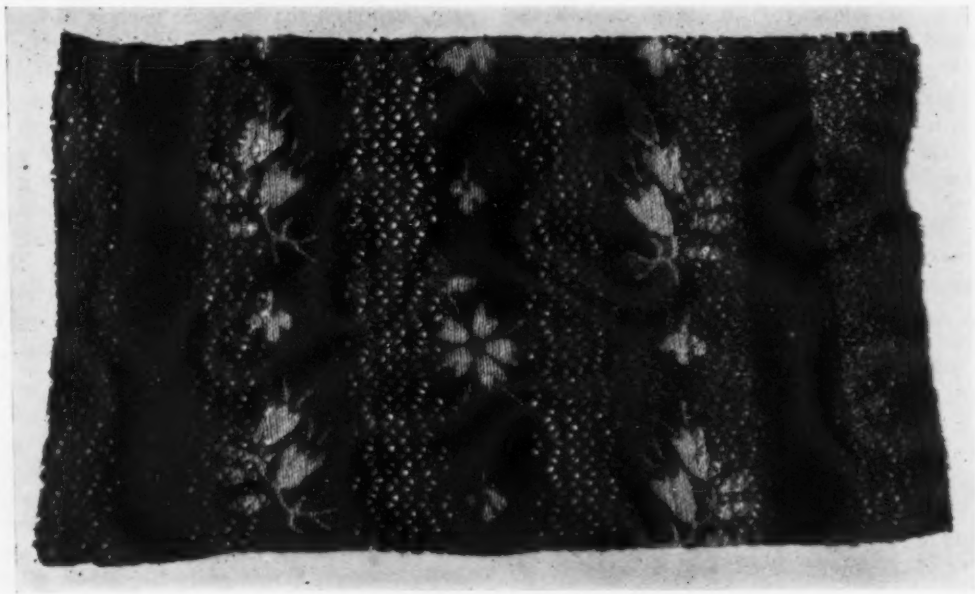
There are a number of other distinguishing tests, but the above are characteristic.

Berwick.

PRINTED HOSIERY

Editor Textile World Record:

We want a process to take the color from hosiery in designs and also a process to print on colors of hosiery similar to the enclosed pieces of cotton prints. Any information you can give us would be appreciated. Wilcox (1907).



SAMPLE OF PRINTED STOCKING.

By a piece of exceptional good fortune I am able to send a cotton stocking from which the color has been discharged in three rows of floral designs down the front. Although rather the worse for wear, it will serve to illustrate what has been done in this direction. The stocking was bought some five years ago from an English draper who had no more of the kind in stock and a search for similar goods goes to show that they are not available and probably not procurable.

Although the name of the maker is not actually known there are grounds for supposing that the white figures upon this black stocking have been produced according to a method invented in 1905 by F. W. Fanshawe and worked for a time by the hosiery dyeing firm of Shuttlewood & Fanshawe, Leicester (Eng.). In this method the stockings are first dyed and then drawn over a shape or former made of aluminium or some other suitable non-absorbent substance. They are then printed by hand, using a block with an engraved face either of wood or metal which has been coated with a discharge-composition received from a felt pad. The composition may be a colorless one, intended simply for the production of a white patch; or it may contain in addition to the chemicals required to effect the discharge of the ground color, a different color and thus produce a colored instead of a white print.

The purpose of the aluminium "board" or former is to hold the fabric in position for printing and to prevent the discharge compound from affecting the further side of the stocking. The color used in dyeing must be such as can be discharged, and after printing the stocking is to be allowed to dry for a few minutes before being placed in the steam-chest, where it should remain for 10 to 15 minutes in live steam at a pressure of two pounds an inch. The discharge being

alkaline in nature it is necessary to neutralize its alkalinity by washing in a sulphuric acid solution of suitable strength and then to rinse the articles in cold water to get rid of the acid before proceeding with finishing in the regular way. Any color maker will supply good advice as to the discharging agent to use with his own colors. Mr. Fanshawe specified for his process of making colored prints a mixture of 25 per cent. glycerine, 25 per cent. color, 50 per cent. water—to which was to be added to the extent of half the weight, a discharge composed of 1 part hydrosulphite, 1 part gum arabic, 1 part water and 1/4 part zinc oxide. The details vary with the dye and the heaviness of shade and if a color like Titan fast black is used the following would be an appropriate mixture:

3 to 9 lbs. Hydrosulphite conc.
1½ gills Glycerine
3 gals. Gum Tragacanth

with addition, when dissolved, of

9 lbs. Zinc Oxide.

Instead of steaming, three minutes in the ager at 215° F. and instead of souring a washing in warm water may be substituted with this color. By using aniline blacks and discharging with suitable chemicals before ageing it is possible to produce red, yellow and other discharged spots without use of a printing color.

The details are given because they are asked for; as to their positive utility nothing can be said. It is significant that stockings ornamented by this process are not found in the market and significant also that the Fanshawe patent was allowed to lapse at the end of its first term of four years. The mere printing means considerable labor, but this is not the total bill. There are bleaching, and perhaps singeing, to reckon in, so that printing discharge white involves at least a dozen extra processes. The cost of them ought to go a long way towards defraying the expense of embroidering or extra knitting, but as to this let the inquirers judge. The specimen sent is proof that the work can be done satisfactorily in technical respects—for the stocking has been much worn and washed—but experience is rather against the supposition that the process is an economical one.

As to alternative methods of printing hosiery, "Wilcox" might look up the valid patent (27,481 of 1903 English) taken out by Robert Baird, 72 Leonard St., New York. A machine for stencilling designs on stockings and half-hose is therein described. If special weight is attached to printing as a means of ornamenting hosiery, a thought might be given to the idea of using printed yarn, although that may be useless in forming designs without using special attachments upon the knitting machines. If the stockings are not intended to wash, novel effects might be attained by printing them in bronze powder—after the manner of the metallic prints once popular as linings and material for undershirts; or again by printing with some siccative and shaking cotton-dust over the surface, to attach itself to the printed spots—after the manner of various nets, muslins and cheap stuffs sold to make shirt waists. James Strand.

CALCULATING SIZE OF GRAIN BAGS

Editor Textile World Record:

Assuming that a grain bag 20 inches long by 38 inches in circumference holds 98 pounds of grain, how can I determine the size required for a bag of greater or less capacity? Bentel (1931).

Based on the assumption, which is not exactly correct, that a grain bag when filled assumes the form of a regular cylinder, the method of calculation is illustrated by the following examples:

Ex. A grain bag 20 inches long by 38 inches in circumference holds 98 pounds of grain. How much would the bag have to be enlarged to hold 122 1/2 pounds?

A cylinder of the given dimensions contains 2,299 cubic inches, and this at the given weight would be equal to .0426 pounds per cubic inch. At this rate 121 1/2 pounds would fill 2,875 cubic inches. This would be the capacity of a cylinder 38 inches in circumference and 25 inches long; or of a cylinder 42 1/2 inches in diameter and 20 inches long. These calculations make no allowance for the part of the bag taken up by tying, but they illustrate the method of procedure.

Knitting Department

THE KNIT GOODS SITUATION

At the time of the writing of this article, the month of August is drawing to a close and it is agreed among knit underwear manufacturers and salesmen that it has been a very quiet month, probably less business having been transacted than usual during the corresponding month in other years.

It was expected that a great many Southern buyers would be in the market during the month and by some it was felt that they would be in a position to place more liberal orders than usual and possibly make up for some of the shortage of orders of the Western jobbers, but these hopes failed of realization. The larger Southern buyers did not come on at all, and those who did come, proved to be buyers for the smaller houses. The principal cause for this is the heavy cotton crop that is now making its appearance and on which many buyers are depending for lower prices than manufacturers are now asking. A careful investigation, however, shows that nearly all manufacturers are now selling their production on a basis of cotton at about 12 cents per pound, and there are only a few who believe that cotton will be any lower, even with the heavy crop that is anticipated.

It is gathered from nearly all the buyers from jobbing houses that were represented in the market during the last month, that stocks have been reduced considerably during July and August, and that buyers are now in a good position on nearly all lines of light weights. Especially is this true on the better grades.

There is another cause for apprehension on the part of knit underwear manufacturers, and that is the demoralizing effect of the apparent determination of manufacturers of 25-cent balbriggans to slash their prices down to a basis where there is not a profit left. It is understood that this cut was started between two manufacturers located in the western part of New York State. Others had to meet the quotation, and it now looks as if the larger part of the cheap balbriggan business for 1912 will be done without profit to the manufacturer.

A meeting of the makers of this class of goods was held in Amsterdam last month and it was decided to shut down a number of these mills for six weeks, beginning August 12th. This will mean the curtailment of production of a large quantity of this class of merchandise, but just what effect it will have on prices remains to be seen.

The reduction of prices on spring lines has been almost entirely confined to men's spring balbriggans, about the only other exception being made on women's low priced straight ribbed vests, some numbers of which have been reduced 2 1/2 cents per dozen since the orders were taken in July Nearly all other prices remain firm, showing that manufacturers of other classes of light weights have the situation well in hand, and it is hoped that the early prices will be maintained.

One of the lines of light weights on which jobbers are operating somewhat sparingly for 1912 is ladies' shaped goods. We gather from buyers who have been in the market the information that the demand has not been as good for this style of garment as in former years. Some jobbers have stated that they are carrying over quite a quantity of shaped goods. Manufacturers are showing a great many plain stitch shaped lines, and jobbers are placing their orders on the finer gauge cloth instead of the tuck stitch. This is especially true on the various lines of ladies' combination suits, and one large manufacturer who heretofore has had a large production of tuck stitches states that 80 per cent. of his orders for 1912 are for plain stitches.

The R. A. Knitting Co. of Hagerstown, Md., are making a line of plain stitch vests

and pants for 1912 at $2.00 regular, which have been bought very largely by the users of this line. The combination suits in the same cloth sell at $3.75. They have also made a decided improvement in their line of 50-cent vests and pants for the coming season by making them on the plain stitch of fine combed yarns on Cooper spring needle machines. These are being bought by their customers in place of the lisle thread goods at $3.75.

A FANCY TRIMMED STRAIGHT VEST.

One line of ladies' straight ribbed vests that has sold quite freely for the coming season is the patent garment with the can't-slip shoulder strap. The peculiar cut of this garment seems to have commended itself to popular favor. During the past season buyers have had considerable difficulty in getting desirable numbers of this line delivered in the month of July and as a consequence of this have placed their orders in larger volume for 1912. Some few manufacturers are getting out an imitation of this popular cut, but the larger business is being placed on the widely advertised line. The lowest priced genuine Cumfy Cut is sold to the jobbers at 75 cents, while some of the imitations may be had as low as 67 1/2 cents.

A new garment to make its appearance is a man's combination suit made of peeler cotton in a two by two rib with short sleeves, knee length only, at $3.75 per dozen. This is made by the Fuld & Hatch Knitting Co. on the same machines that make their Chilproof line of worsted goods. It makes a very elastic fabric and has the appearance of a high priced imported garment.

The Girard Co. have also introduced a line of 50-cent suits for men. These are made of fine checked nainsook, have the elastic strip across the back and are sold at $3.75.

Among the newer designs of fancy trim straight vests is one style which we illustrate herewith. These are from the Achuff Knitting Co.'s line and are sold to the jobbing trade at $3.50, and it is in the face of such merchandise as this that the German manufacturer has about given up trying to sell 50-cent straight ribbed vests in this market.

HOSIERY

The hosiery market is in a fair condition today. Manufacturers have a good volume of business on their books and prices are being maintained, although, on account of the reduction in prices of some lines of underwear, many jobbers have written the manufacturers and agents, asking for concessions on the prices from which the orders were placed in July. So far as we can learn in every instance, manufacturers are standing pat on the orders already taken. There are a few of the larger jobbers who have not bought, as yet, and many of the city houses still have orders to place, but it is felt by agents here in New York that these factors will come into the market soon and place some business, so they can get samples to begin to solicit spring business with.

The weakest point in the hosiery end at present is in low priced half hose, some of the quotations being for 2-pound, 84-needle, bundle goods, and also for 144-needle boxed goods at from 55 to 57 1/2 cents.

Silk hosiery continues to occupy the center of the stage, and now it excites no comment to hear of silk goods at $1.85 per dozen.

The orders thus far placed for spring show that the demand continues for thin, light weight hosiery and it begins to look as if the ordinary weights of three or four seasons ago have gone, never to return. There is possibly just a little reaction from the extremely thin goods to fabrics that will stand the wear a little better than some that have been on the market.

White hose are greatly in demand and anything that can be found in white goods has been picked up in the past month very quickly by buyers at fancy prices. Tans are weaker than was anticipated early in the season and no difficulty is experienced in getting all that are needed.

some very handsome designs in high priced embroidered silk hosiery are being displayed.

Infants' socks sold well during the season just past and buyers are placing liberal orders for another spring. Some lines with the elastic woven in the top are being taken quite freely. The principal colors are combinations of red, blue and tan cuffs on white boots. There are some extremes being shown in the way of shaded blue with embroidered white dots, also white silk socks with embroidered pink rosebuds.

TRACING KNIT GOODS THROUGH THE DYEHOUSE AND FINISHING ROOMS

BY FOREMAN

These few words in regard to tracing goods through the dyehouse and finishing room are submitted in the hope that they

Date	Mar. 12
Lot No.	1
No. Doz.	45
Style	a
Size	9
Color	Black
Weight	100
Ins. No.	

FIG. 1.

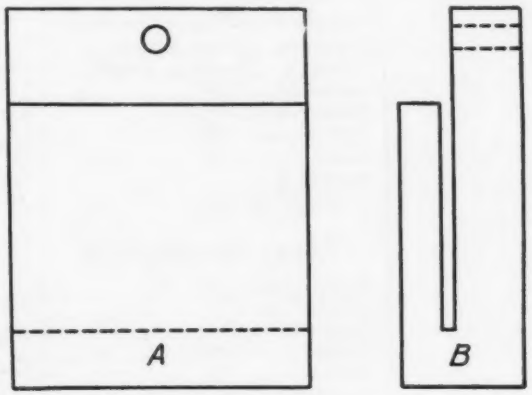


FIG. 2.

There is an increased tendency toward fancy hose for another spring. This is noticed first in men's half hose and some orders of fair volume have been placed on stripes and drop stitch two-tone goods. The call for ladies' fancies is developing slowly and has not yet attained the importance expected a month or two ago. Nevertheless, it is felt that it is going to increase month by month, and a revival of laces and embroidered goods is looked for. In the larger cities some of the exclusive shops are showing embroidered goods quite freely and

may aid knitters to find out "where they are at." Below will be found a method that has given satisfactory results; it enables one to know at any time just where the goods are. Before sending the goods to the dyehouse, each style is dstinguished by a letter or number and is sent down in lots of from 50 to 100 pounds, or in whatever quantity is most convenient.

We will begin with style A, size 9, of which it takes 45 dozen to weigh 100 pounds. The first two lots we will enter in the dye book in the following order:

Lot No.	No. Doz.	Style	Size	Weight
1	45	A	9	100
2	50	B	7	100

The day's work is recorded in this way: The lot numbers begin with No. 1 and continue in numerical order from day to day until No. 100, or any other number that may be selected, is reached. A new series should not be begun until No. 1 is finished and out of the way, so that two lots of the same number may not be in the room at the same time. Each lot will be accompanied by a ticket similar to that shown in Fig. 1. This ticket corresponds with lot No. 1 on the dye book, and is kept with the goods until they get to the boarder.

After reaching the dyehouse, the first process, if the goods are to be dyed an oxydized fast black, is to put them through the tom-tom; here the ticket belonging to the lot is hung on the tom-tom in a small piece of board split part way through, as shown in Fig. 2, the ticket being inserted in the cut made by the saw. This prevents the tickets from being spattered by the dyestuff.

After being "tommed" the ticket holder containing the ticket is put on the lot, which is then ready for the oxydizing cages. When the goods are entered, the ticket holder with the ticket is hung on the cage containing the goods. The ticket then follows the goods to the aging room, and so on until the lot is ready for boarding, when the ticket is taken from the case and sent with the lot to the boarder. The boarder's account must correspond with the ticket, which is then destroyed.

Finishing Ticket

Lot No. 1 Date Mar 12, 1902
Style No. a
Color Black

Size	4	4½	5	5½	6	6½	7	7½
No. Doz.								
Size	8	8½	9	9½	10	10½	11	11½
No. Doz.			45					

Boarded by John Jones
Pressed by Martha Smith
Paired by 45
Mended by 21
Stamped by 10
Boxed by 15
Bundled by
Inspector's No. 27

Final Inspection

No. Dozen Inspected 10
Single Knee
Menders 2
Seconds None
Repair "
Repress "

Pairer's Coupon

Lot No. 1 Date Mar 12 1902
Style No. a Name 45
Color Black
Size 9 No. Doz. 45

Pd 1st	M	Md.	Repress	Redye	Odd
42-8	1-10	-10	-6	-3	-3

Stampers' Coupon

Lot No. 1 Date Mar 12 1902
Style No. a Name 10
Color Black
Size 9 No. Doz. 42-8

Boxer's Coupon

Lot No. 1 Date Mar 12 1902
Style No. a Name 15
Color Black
Size 9 Doz. 42 ½ Doz.

FIG. 3.

After the goods are boarded they are sent to the presser accompanied by the ticket shown in Fig. 3. This ticket follows the goods through all the other processes until they are packed. On reaching the packer the finishing ticket alone remains, as the other coupons have been detached during the various processes, each operative retaining her respective coupon, filling it out and retaining it for a memorandum by which she is paid.

Each operative is known by a number, and the coupon is filled out and detached in the

manner following: After the goods are boarded, the boarder presents ticket, Fig. 1, with the lot boarded to the foreman, who gives him credit for the same. The foreman then fills out the first part of the ticket, Fig. 3, as shown, and gives the lot to the presser. After the goods are pressed, the presser's name or number is put on the ticket, the lot and quantity being entered to the credit of the presser on a book kept by the foreman. The lot with the ticket attached then goes to the pairer, who inspects and pairs the work, fills out the pairer's coupon and detaches it, at the same time putting her name or number in the proper place on the main ticket, as designated by the words "Paired by," Fig. 3.

The goods are then examined by the inspector, who picks out several dozen from different parts of the lot for this purpose, and marks the result of the inspection on the main ticket, Fig. 3, under "Final Inspection."

The goods are now given to the stamper who stamps them and fills out and detaches the stamper's coupon, after putting her name or number on the main ticket. The lot then passes to the boxer who boxes them and fills out and detaches her coupon after putting her name or number on the main ticket. The boxer's coupon being the last, the main ticket is retained with the lot for future reference. By filing the finishing ticket and having the boxer's stamp on the bottom of each box, giving the date and number of the lot, any complaints from purchasers of the goods can be readily traced to the person responsible for the defects. This will be found very convenient, as carelessness on the part of the help may be easily detected and remedied.

Opposite "M" (meaning mender), "1/10" means 1 dozen and ten stockings. "Md." means mended; that is, the goods were mended before going to the dyehouse.

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Germany imports close to $100,000,000 worth of raw wool annually. The wool clip in Germany is estimated at about 11,000, whereas exports are over 40,000 ton.

THE PRESSING, FINISHING AND BOXING OF KNITTED NECKTIES

BY LARAMIE

After knitted neckties come from the knitting machine if they are made of wood silk or fiber, it is necessary to run them over live steam and through a pair of rollers. A ten-gallon boiler is usually used with a two-burner gas heater under it, also a water gauge on the boiler so as to be able to see how much water is in it. This is then connected at the top with a pipe leading to a table on which rests a piece of brass tubing about two inches in diameter, which has two slots in the top, allowing the steam to come out. At the end there is a drip to let the water run away from the steam.

These wood silk or fiber ties are then held at an even tension, passing over the steam not very fast and then through the rollers. These rollers are heated by gas, the tubing being inserted in both top and bottom rollers, with holes about one inch apart. The rollers are covered with asbestos or cotton so as not to leave a shiny appearance on the ties. This process is adopted for the ties in a string, before they are cut. After they have gone over the steam and rollers they are all of the same width. As the neckband must be narrower than the rest of the ties, each neckband must be held tight, passed over the steam and pressed hard over a hot round surface. For this work a round iron pulley say six inches in diameter is fastened on a piece of shaft, which is fastened on a table with the pulley projecting eight or ten inches. This work is done quite rapidly after getting accustomed to it. A dozen neckbands can be so pressed in one minute.

Silk ties made out of the better quality of silk need not be run through the rollers. All that is required is to hold them over steam and then press the neckband as described above. All neckties are pressed the same on the neckband, but on some patterns the neckties part when running through the rollers. The rollers are so equipped as to allow a very loose or tight press as required, by the use of thumb screws.

After the neckties are pressed they are

given to the finisher. At first the finishing was done all by hand sewers, the ends were raveled down to one-eighth of an inch and the needle and thread were run through the loops or stitches. By this method about 25 to 30 dozen would be all one girl could do in a day. Recently machines have been equipped to do this finishing, and they not only make a better finish, but the work can be done over four times as fast as by hand. With the machine work there are ends left on each side, which could not be cut off short or they would ravel out, so it is necessary to take a latch needle and insert it through the tie and up and out at the corners, pulling each thread through to the inside of the tie.

Knitted neckties made of wood silk or fiber are usually ordered in gross lots of either six or twelve different colors and in some cases they are required to be put up assorted, so that one of each twelve colors are put up in a box. If only six colors are ordered, two of each color are put up and a band or label put around each half dozen ties.

Fig. I shows a form used for keeping an account of the daily production.

When orders are made out from the order book on these slips they are placed in pigeon holes for each style number, with the earliest order on top. When the knitter wants an order he takes one for the machine standing. After he has made the required quantity he puts the ties in a box, pinning on this order slip after he has torn off the first slip under the heading of "knitter." Then the ties go on to the presser, etc., until finished.

Color of Box	Baxer.	Finisher.	Presser.	Knitter.
Special No.	Ticket No.	Ticket No.	Ticket No.	Ticket No.
Remarks.	Style.	Style.	Style.	Style.
	Color.	Color.	Color.	Color.
Ship When.	Quantity.	Quantity.	Quantity.	Quantity.
		By Whom	By Whom	By Whom
Order No.	Date.	Date	Date.	Date

FIG. 1.

BLEACHING COTTON KNIT GOODS

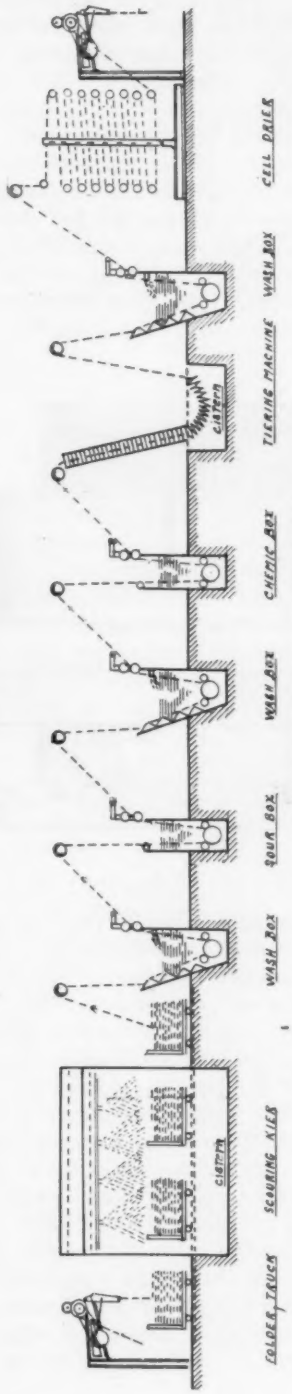
BY JOHN D. STREET

The bleaching of knitted fabrics does not require the same treatment as the ordinary cotton piece goods. The nature of the cotton used and its manufacture calls for a different treatment in the finishing than that received by cotton goods in the ordinary bleachery which is generally equipped for the handling of many tons a day, embracing various grades, but all woven goods, which, owing to their bulk, require hard packing and necessarily, roping. This has led more than anything else to the use of the high pressure kier, for doubtless some pressure is required to force the scouring liquor through the folds and twists of the roped cloth.

For the uninitiated we may explain that ordinary cotton cloth, previously in the open width, is passed through a pot-eye or circle of hard rubber or porcelain, 4 inches in diameter inside. The boy inside the kier, equipped with a stick, coils, plaits and tramps down the cloth as it descends, making as solid a pile as possible. It stands to reason that if this were not done, channes or open places would cause the liquor to flow in that direction and part of the kier of goods would

remain unscoured. Everybody knows that the object of this scouring is to dissolve the wax like substance which the cotton itself contains, and the sizing which has been added in the course of its manufacture. This scouring is accomplished by a boiling liquor made up of water and dissolving chemicals which are repeatedly drenched over the material. Unless this is thoroughly done, no amount of "strong bleach" will correct the effect of the first carelessness. If tender goods do not follow, one thing will surely happen: the white on the goods will not be permanent, but with storing will take on a yellowish cast, hence the bleaching of knit goods should receive fair treatment and one suited to improve its selling qualities.

For the knitting manufacturers desiring to do their own bleaching, I submit what is a new system of bleaching in the open width, avoiding as much as possible twist, roping, etc. At the same time, one which will be a time saver and can be easily taught to the ordinary operative. The first cost, a modest one; and owing to the fact that the process is continuous, it cannot fail but to be economical both in labor and chemicals. Briefly described, the necessary machinery and process are as follows: The webs in the gray are sewn end to end and plaited down by a mechanical folder in the open width on suitable trucks. When filled, these trucks are pushed into the kier which is rectangular in shape, constructed of either wood or metal of sufficient size to accommodate a day's bleaching. Under the pitched roof of this kier is a false, perforated roof of galvanized iron to act as a sprinkler. The kier will have no bottom but will rest on the sides of a concrete cistern, large enough to contain the necessary number of gallons of scouring liquor. An injector or pump will force the scouring liquor from the cistern through a steam heater to a pipe placed outside of the kier, which will connect with a perforated pipe placed inside and lengthwise between the two roofs of the kier. Thus the liquor will be sprayed over every portion of the material, percolate downward through the fabric and will be collected in the cistern and forced back again into circulation through



APPARATUS FOR BLEACHING COTTON KNIT GOODS.

the heater. This principle does not materially vary from the usual process of kier boiling, except that the material being laid out in long folds, untwisted, will get a quicker and a far greater saturation than by the old method. When the scouring process is accomplished, the trucks are withdrawn from the kier and the end of the web, in the open, is passed over a driven reel and then into a specially designed wash box fitted with squirt pipes. The material then passes through a pair of squeeze rolls, over another reel to another smaller box, lead lined, for souring

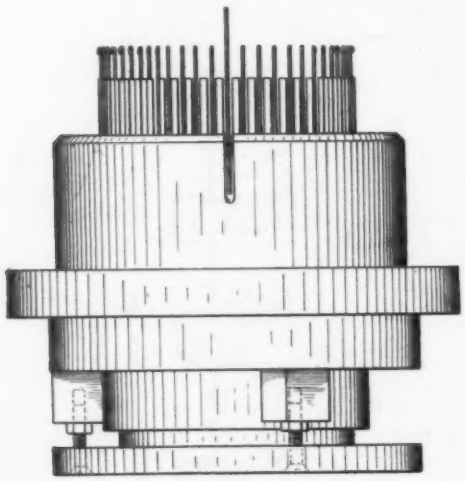


FIG. 1.

in acid, is squeezed, passed over another reel and then down into another rinse box containing water and squeezed. The material passes over a reel and into the chemic box and again through squeeze rolls. Here the material must be retarded to allow the actual bleaching or whitening to take place, so under the reel a tiering machine will be used to advantage, carrying the material down in the open to a cistern under the floor. By the use of a special developer, a few minutes will be sufficient to allow the chlorine gas to develop. The end is carried again over a reel and into the final specially designed rinse box, is squeezed and can be directed over the dryer, making a continuous operation from the time the material leaves the kier. Here it should be noted that the goods have never been handled or piled from the time they were plaited on the trucks. This system shows a great saving in labor, in floor space and in remnants. Tender and uneven goods will be practically eliminated. There are a few special features connected with this system of open bleaching which cannot be shown in this brief sketch.

CHANGING NEEDLES IN THE CYLINDER

An improved method of removing needles from the cylinder and replacing them has recently been patented, and is described by the inventor as follows:

Fig. 1 is a side elevation of the bed plate, cam and needle cylinders of a circular knitting machine; Fig. 2 is a sectional view of the parts shown in Fig. 1; and Fig. 3 is a side elevation of a needle cylinder.

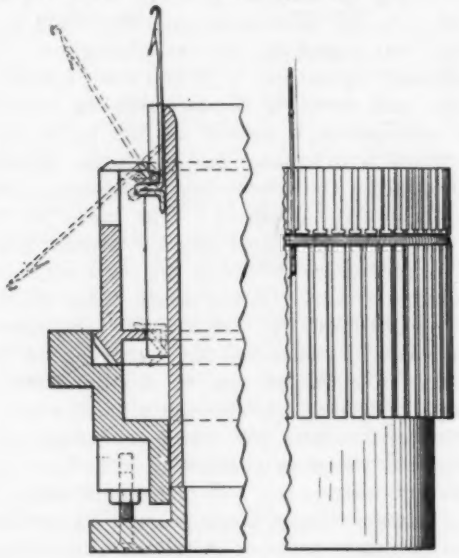


FIG. 2. FIG. 3.

The tubular needle cylinder is provided with a plurality of radially disposed needle slots in which the needles are mounted for vertical reciprocation in the usual manner. The needle slots are formed by spaced ribs, which extend radially from the cylinder body, thus forming an annular offset. Simi-

larly spaced ribs extend from the upper end of the cylinder, but are shorter in depth, and the slots formed by the spacing of the ribs are in alignment with the slots.

The lower ends of the upper ribs and the upper ends of the lower ribs terminate short of each other, and thus form an annular groove or recess intersecting all of the slots, and adapted to receive a coil spring band, which yieldingly bears against the shanks of the needles mounted in the slots, and holds them in sliding engagement with the cylinder body so that they will be free to have vertical reciprocation, but held against lateral displacement.

The lower edge of the needle cylinder is mounted upon the upper edge of an adjusting ring, which latter is supported by the bed plate by means of adjusting screw bolts in the usual manner. The bed plate is of step formation in cross section, the lower portion of which embraces the needle cylinder, the middle portion being greater in diameter and forming an annular recess or chamber, and the upper portion of still greater diameter and forming a seat for rotatably confining the cam cylinder in proper position with relation to the needle cylinder. The cam cylinder has an inner flange to limit the downward movement of the needles, the heels of which project beyond the ribs, as shown in Fig. 2. Suitably secured to the upper edge of the cam cylinder is a top plate to span the space between the cam and needle cylinder for the purpose of preventing dirt and dust from entering.

Formed in the side of the cam cylinder and extending through the top plate is a slot, 17, through which needles may be inserted or removed from the needle cylinder. The method of removing or inserting a needle into the needle cylinder is as follows: As the needle cylinder remains stationary, the cam cylinder is rotated until the slot registers with the slot in the needle cylinder from which it is desired to insert or from which to remove a needle. In removing a needle the same is raised until the heel engages the spring band, which limits its upward movement. The upper end of the needle is next drawn outwardly and downwardly, as indicated by dotted lines in Fig. 2, against the tension of the spring band, until the heel clears the band, after which it may be withdrawn without further hindrance, and without disturbing the remaining needles in the cylinder.

In order to insert a needle the spring band is drawn out of its seat by any suitable tool, and held until the heel of the needle is passed over it, when the tool is withdrawn and the needle will freely slide into its slot. As the weakest part of a needle is at the point of the heel, and in consequence of which the most breakage occurs at that point, it frequently happens that the lower broken off section assumes such a position as to become jammed between the cam and needle cylinder, owing to the small intervening space, and thus interfere with the free rotation of the cam cylinder, necessitating the removal of the needle cylinder in order to displace the obstruction, with the consequent loss of time and expenditure of labor. It is for the purpose of overcoming this difficulty that the annular chamber is provided beneath the ends of the ribs on the needle cylinder, and permitting the broken needle part, as shown by the dotted lines in Fig. 2, to drop down in its slot until one arm engages the flange on the cam cylinder.

THE MANAGEMENT OF HELP IN A KNITTING MILL

BY DAN BUCKLIN

One of the most important things in the successful management of a knitting department is ability to control the help. For various reasons it is harder to control operatives in this department than in any other, chief of which is that they are generally younger. The foreman must be a man of great patience. It is essential for the success of any department that there should be a good man at the head, but this is especially true of the knitting department. A foreman of knitting must be not only a practical knitter, but know how to manage the help. Another fact bearing on this question is that it takes from three to six months for a girl to learn

the work and after she has become expert at it it is poor policy to discharge her for breaking some of the rules and be obliged to get a new girl in her place. Every time the foreman discharges a skilled operator he knows that it will take from three to six months to replace her and that the production of his department will be cut down for the same length of time. The operators know this also, and know they will not be discharged for any slight offense, and for this reason they are apt to take greater liberties than the help in other departments, who know if they are discharged the foreman can fill their places at once.

The foreman must learn to adjust himself to the conditions under which he is working. He cannot use the same policy when help is scarce as when the supply is plentiful. Under the present conditions there are certain things that a foreman must overlook and a very good rule to follow is to try to overlook the faults of the good operators and make examples of the poorer ones. But it does not do to give even the best help too much liberty. There is a certain place to draw the line and the man who knows just where that place is will be a success. Sometimes a foreman makes the great mistake of trying to let everyone know how much authority he has; while if he really has any great amount of authority the help will find it out without his trying to find opportunities to display it. Some foremen seem to think that every time they pass down an aisle it is necessary to give somebody a call down. This is one of the greatest mistakes a man can make. It makes him unpopular with the help; they lose confidence in him, and they soon get so used to being found fault with that they don't pay any attention to it. In the end he loses the respect of the operatives and when that happens the best thing he can do is to resign before being asked to do so. I know of more than one instance where the help simply refused to work until the foreman was discharged. I have found from actual experience that the boss who can run his department with the least amount of bossing is the boss who is a success.

The foreman should be very careful about making promises that he cannot fulfill, particularly in regard to prices. In most mills there is considerable difference in prices paid for the same operation on different styles or gauges of work. For instance, goods that are paying a good margin of profit will stand a better price than those that pay the stockholders little or nothing. Generally speaking, it is necessary to pay better prices for fine work than for coarse work. The finer the gauge, the higher the price and the operators can also earn considerably more on fine work than on coarse work. This is sure to cause dissatisfaction among the help and the dissatisfied ones are continually asking for a better place. Here is where good judgment on the part of the foreman is necessary. If he is looking out for the interests of the company he must keep the best operators on the higher priced work and the poorer operatives on the cheaper work. He should be thoroughly familiar with the ability of each operator and when a girl asks for a better place, if he knows she deserves it he should promise to give it to her at the first opportunity and then not forget to do so. On the other hand if she has not the ability for the better place he should tell her as plainly and as pleasantly as possible and at the same time encourage her to do better work so that she may be advanced later. It should be the purpose of every foreman to encourage and advance his help in every way possible.

It is an excellent plan to start the new help on coarse work and advance them as fast as they prove capable of doing a better class of work. This makes it an object to them to try to improve if they know a better place awaits them as soon as they can show themselves capable of filling it; in this way the most deserving help always have the best work. The conclusion from all this is that the proper way to manage help in a knitting room is for the foreman to treat each one as he would like to be treated if he were one of them.

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The average value of cotton seed for the crop of 1910 is $27.40 per ton, compared with $27.70 for 1909, $15.60 for 1908, and $17.60 for 1907.

Dyeing, Bleaching, Finishing, Etc.

TEXTILE MILL SOAPS

BY DR. LOUIS J. MATOS

The best soap that any textile mill can use depends upon the class of fabrics manufactured and the several processes conducted in the mill. No two mills making identically the same grade of fabrics will use the same processes, as the ideas of the various foremen of similar departments in different mills are not the same. A soap which produces superior results in one mill may yield very inferior results in another mill.

The scouring of raw wool requires judgment in order that the texture, elasticity and luster of the wool should not be impaired, and for this reason a soap with free caustic alakli should never be employed. This observation refers particularly to soft clothing wools which have a high shrinkage value. On the other hand cross-bred Ohio wools, some British and Canadian wools and wools generally of Class III type can be scoured with soaps which may contain slight traces of caustic alkali without any appreciable injury.

Without doubt potash or soft soaps are the most suitable for scouring fine wools and should be invariably used for the reason that potash soaps have a mild though positive detergent action, loosening and dissolving the suint and mechanically adhering dirt on the fibers and leaving the latter when properly rinsed in a free and lofty condition.

Potash soaps appear to have a beneficial and nourishing influence on the wool. In scouring wool with potash soap it is always an advantage to add a slight amount of pearl ash (carbonate of potash) which aids in shortening the time of immersion in the scouring liquors.

Some scourers neglect to observe, however, a most necessary precaution in fine wool scouring, that is, to keep the temperature down, excessive temperature, or any temperature above 125° F. will permanently remove the natural curl from the wool fibers, thus greatly impairing the spinning qualities.

The scouring of woolen and worsted yarns is also a matter of great practical importance, and while the question of soap is to be considered, it depends greatly upon what kind of oil has been used in the picker house.

Dilute ammonia in sufficient quantity to combine with the oil on the yarn to be scoured is added through a sprinkler trough to the boxes, the water in which is heated to 125° or 130°. In some cases a little soap in addition may be required.

Low and medium grade wools, whether raw stock or yarns, are effectively scoured with soda or hard soaps, the same precaution regarding temperature being observed.

An ideal soda soap for woolen mill use is made with tallow and which answers every practical purpose. Its composition is as follows:

300 lbs. Tallow.
40 lbs. 98 per cent. Caustic Soda.
21¾ gals. Water.

This soap when finished contains about 34.5 per cent. moisture, and is a typical hard, white mill soap.

The yellow shade of many soaps is due to the presence of rosin, which is an adulterant. Rosin, or rosin soap, is not a detergent. This will be seriously considered when it is known that a soap cannot be made from rosin, and that rosin oil, under the usual conditions which apply to soap making, will not produce a saponified article.

A question is frequently asked regarding "olive oil foots," and which constitute the last available oily residue from the oil producing olives. "Foots" is readily saponified and is a valuable soap stock.

In the finishing process as applied to woolen or worsted fabrics soap is necessary, not alone for scouring, but in the fulling, and

this applies to fabrics that are to be fulled either before or after dyeing; in either case soda soaps may be used without detriment, the object being to maintain a stiff lather with a sufficient quantity of soap under the influence of the heat induced by the action of the fulling mill. A fulling soap should be one that can be readily washed out and leave no soapy odor in the goods.

Some attention should always be given to the soap to be used on the goods to be fulled or milled, especially if they have been previously dyed. It frequently happens that some soaps, overloaded with free alkali or charged with silicate of soda have caused a material difference in the shade of the cloth when finished. It is on record where cloths dyed with proper coloring matters and milled with a proper soap were quite satisfactory, but milling with a soap of another make caused the cotton to bleed seriously. A chemical analysis of the soap showed excessive free alkali in the subsequent delivery of soap.

Some special fabrics, laces, for instance, whether made of cotton or linen, cannot be subjected to the harsh treatment usual for wool on account of their delicacy, and for this reason a persistent lathering soap is desired. Soaps made from cocoanut oil is well suited for this class of goods, the following formula being from practice:

280 lbs. Cocoanut Oil,
40 lbs. 98 per cent. Caustic Soda,
22 gals. Water,

and contains when finished about 36 per cent. moisture. This soap is not quite neutral, as the class of goods for which it is used does not require complete neutrality, but if neutrality is desired an addition of 20 lbs. more cocoanut oil will make it so.

Whether it is an advantage for a textile mill to manufacture its own soap, or to buy it in the market, is a matter open to consideration. Where a mill handles sufficient wool and consumes several barrels of soap daily the question of making their own soap should be given careful consideration, where only a few barrels of soap are used weekly the matter becomes not quite so interesting. The claim for an advantage of a mill making its own soap always assures a uniform product and with a certain knowledge of what goes into the various departments of the mill.

When soaps are purchased all purchases should be by contract, specifying the amount of fatty acids, free and combined alkali and moisture, and that all deliveries should be checked against a standard sample and controlled by frequent chemical analyses. Referring again to the lack of detergent value of rosin or rosin oil, the woolen manufacturer purchasing soaps on contract should stipulate that rosin be not present. The fats and oils permissable in textile soaps may be safely limited to olive oil, tallow, cotton-seed oil, palm oil, and in special cases cocoanut oil. The question of excessive loading of soaps with silicate of soda should also be given more attention than it receives, and while it has certain detergent qualities it is primarily a cheap article and is used as a filler, and without any of the usual detergent qualities of soap.

PRACTICAL DYEING

PART III

BY RENMARK

THE ANIMAL FIBERS

The most important of the animal fibers is wool, the wool production of the whole world being about two and one-half billion pounds. By wool is generally meant the hair of sheep, but several other animals give us a similar article which varies, however, in quality and physical appearance. Alpaca comes from an animal known as the llama, while we get mohair from the Angora goat, whose habitat is Turkey and the Cape.

Cashmere wool, the fiber at times being as long as 18 inches, is obtained from goats which inhabit Thibet. Camels shed their hair periodically and this is collected and becomes an article of commerce known as camel hair. The hair from rabbits is also classed under the general heading of wool.

Wool, as previously noted, comes from sheep, the best grade being that which is sheared from the live animal, although wool

cut from the dead animal is practically as good.

When, however, a sheep dies or is slaughtered for food, the wool, as a rule, is not sheared from the skin but is loosened by chemical means and pulled out by the roots. This grade is known as pulled wool and is not as soft and elastic as live wool. If a piece of cloth is woven from a mixture of live and pulled wool, when the color is appiled it sometimes has the appearance of uneven dyeing. Pulled wool is often spoken of as "skin wool" and among the methods in use are the sweating process, the lime process, and the sulphide process.

The sweating process is a fermentation, the skins being allowed to lie around until the hair has loosened by natural decomposition of the animal tissues.

In the lime process the skins are soaked in a solution of lime until the hair is sufficiently loose to be easily pulled out. Inasmuch as the lime is not well washed out, this process makes the wool harsh and its natural elasticity is much impaired.

The sulphide process consists of an application of a solution of sulphide of soda to the flesh side and this gradually works its way through to the roots of the hair and loosens the fiber. Care is taken not to let any of the sulphide of soda touch the wool by running over the edges, as the wool touched by it would be turned into a gelatinous mass. The sulphide can be used as a thin solution or in the form of a thick paste, the strength of the solution being of no consequence.

After the shearing the wool is sorted by hand, the operation taking place on tables, which are sometimes covered with a wire screen from the bottom of which comes a forced draught, the object being to draw away the particles which otherwise would fly around and be inhaled by the workers, thereby causing a disease of the throat.

The quality of wool on the same sheep differs materially, that on the shoulders being the best, that on the back and lower part of the sides coming next in value, while the wool on the belly, legs and other parts is inferior.

In its natural state, termed "in the grease," wool contains, besides the wool grease, a lot of vegetable matter, such as burrs, which get on the animal in the fields. The first operation is the removal of the grease by washing the wool thoroughly in a strong alkaline soap liquor.

A wool washer consists of a long tank about 20 feet long, 3 feet wide and 3 feet deep and contains the soap liquor. The wool is fed steadily into one end of this washer, being carried under the surface of the liquor by means of prongs which automatically raise and lower the wool, being given a forward movement when submerged and thereby pushing the wool forward; they are then drawn up and return to their original position. At the farther end the wool is drawn out by a traveling apron and carried between two heavy rollers which squeeze the liquor out. It then drops into another washer which is identical to the first, only that it contains a weaker soap solution. It then passes into a third washer which contains only water and in this one the soap is washed out.

According to conditions some mills use three soap liquors and some get sufficiently good results with one; two, however, is the general number.

Although conditions govern the amounts of soap and soda necessary to clean the wool the following is a fairly good proportion to use.

Amount of liquor about 1,000 gallons.

First tank: 12 lbs. dry soap, 4 1/2 lbs. dry potash.

Second tank: 9 lbs. dry soap, 1 1/2 lbs. dry potash.

Third tank: 6 lbs. dry soap, 3/4 lb. dry potash.

The liquor should not be used longer than half a day; it should then be drawn off and a fresh liquor made up. The grease taken from the wool by being saponified by the soap is sometimes recovered by chemical means and becomes a valuable by-product. The liquor from the wool washer is allowed to settle in large tanks, the solid particles thereby falling to the bottom. Crude sul-

phuric acid is then added, and this breaks the soap, or in other words causes the soap to release the fatty acids which rise to the surface bringing with them the wool grease. The water is run off and the grease filtered through canvas bags and hot pressed. After one or more operations it finds a sale as a lubricant and also as a product for the manufacture of stearic and olein. In refined forms the recovered grease, as lanolin, is used for salves, etc.

In the process of combing the wool is separated into long and short stapled qualities. The long hairs of about 1 1/2 inches are known as worsted tops, the shorter ones as noils. Worsted yarns ordinarily receive little or no milling, whereas woolen yarns are usually subjected to a more or less severe fulling to cause a felting of the fibers. When spun the worsted fibers lie parallel, while the woolen fibers lie in all directions. Worsted yarns make a smooth piece of material, while woolen yarns produce a loose, fuzzy fabric.

Wool is oiled with an olive oil preparation, this being done to keep the fibers in good condition for spinning. If the wool is dry the fibers have a tendency to fly apart, causing bad spinning.

Before dyeing the oil is removed from the wool by washing the material in an alkaline soap liquor. If the oil is not thoroughly taken out there will be trouble in the dyeing, the color showing up uneven or with a tendency to crock.

Wool has a natural yellow color, and if to be sold as white it is necessary to remove this yellow color, the operation being known as bleaching; the two methods most in use are the peroxide of soda and the sulphur bleach.

PEROXIDE OF SODA BLEACH

This bleach should always be carried out in a wooden vat containing lead steam pipes. No iron should be present if a satisfactory bleach is expected. Before using the vat it is boiled out with soda and then rinsed with acidulated water to eliminate the soda.

The bath is made up as follows: To every 100 gallons of water is added 11 lbs. Sulphuric Acid, 66° Baume (iron free), and 8 lbs. Peroxide of Soda, or sufficient to make the bath neutral.

The sulphuric acid is put into the bleaching bath first, and the peroxide added directly to the bath in the dry powder form, the liquor being stirred to prevent the soda from settling to the bottom in an undissolved form. The bath can then be tested with litmus paper to determine whether it is neutral. Acid turns blue litmus red and alkali turns red litmus blue. When there is no change in the litmus, the bath is neutral and ready to be used. Peroxide of soda is alkaline in its reaction. Enter the wet goods in the cold bath, heat to about 120° F., and leave in the bath for several hours, or until the desired bleach is obtained. After bleaching, blue with Methylene Blue or Methyl Violet.

(To be continued.)

DYEING LIGHT SHADES ON HOSIERY

BY LOUIS J. MATOS

For very delicate tints or light shades on hosiery the bleached material is thoroughly cleansed by ample rinsing after bleaching, and the goods dyed over a winch in an ordinary kettle.

By far the principle colors used in dyeing hosiery are the direct dyeing or diamine colors which go on the cotton without previous treatment, but which, for special purposes, are capable of after treatment with metallic salts, thereby greatly increasing their light and wash resisting properties.

For very light shades dye with

0.5 to 1 per cent. Soda Ash.
0.5 to 1 per cent. Soap.

For fuller shades, prepare the dye bath with

3 per cent. Phosphate of Soda.

Dye for 1/2 hour in a large volume of liquor, and work at about 175° F.

Medium and dark shades are dyed in a bath prepared with

1 to 2 per cent. Soda Ash.
10 to 20 per cent. Common Salt.

Boil for 3/4 to 1 hour in a short bath, and if possible heat the bath with indirect steam. After dyeing work well and finish.

Level shades will always be secured if clean water is used in dyeing, and freedom from spots ensured if the dyestuff is previously dissolved in a pail outside the dye house, and the dye liquor strained into the dye vat.

Shading should seldom be required if a preliminary test is made, but should it be required to bring up a tone, the goods being dyed should be lifted from the dye bath.

IMPROVEMENTS IN COTTON BLEACHING

By WALTER S. WILLIAMS, Textile Expert, Arthur D Little, Inc., Boston, Mass.

Presented before the Congress of Technology.

Bleaching is the whitening or removing of color from a substance, but in the textile industry the term is broadened to include the removal of all foreign bodies and coloring matter adhering to or included in the original fiber. In the case of fabrics, it also covers the elimination of all material, such as starch, oil and the like, added either intentionally or accidentally in the process of manufacture.

Cotton was used for the production of cloth thousands of years before the Christian era, and bleaching of the fabrics so made must have been more or less crudely performed even at that early age. While interesting, the scope of this paper will not permit the tracing of the early history of the art. Ancient processes will therefore be cited only as they may have some bearing upon modern practice.

An efficient process of bleaching requires a thorough understanding of the nature and chemical composition of the fiber and of the substances to be removed, as well as a knowledge of the effect produced by the different agents to be employed. It is a remarkable fact that very few complete studies of the process as a whole exist, and that the few careful investigations of different steps in the procedure have not received the attention and consideration they deserve at the hands of the practical manufacturers. There is no doubt that great progress will be made in the improvement of both processes and results by careful and scientific research in this field.

At the very outset of our study we are met by the fact that the chemistry of cellulose, which composes 83 to 90 per cent. of the crude cotton fiber, is still after many years of investigation far from being clearly defined. Two series of analyses conducted by the Department of Agriculture gave average results as follows:

Fertilizing Constituents:	
Water	6.07
Ash	1.37
Nitrogen	0.34
Phosphoric Acid	0.10
Potash	0.46
Soda	0.09
Lime	0.19
Magnesium	0.08
Ferric Oxide	0.02
Sulphuric Acid	0.6
Chlorine	0.07
Insoluble Matter	0.05
Proximate Constituents:	
Water	6.74
Ash	1.65
Protein	1.50
Cellulose	83.71
Nitrogen-free Extract	5.79
Fat	0.61
Ash from Cotton:	
Potassium Carbonate	44.8
Potassium Chloride	9.9
Potassium Sulphate	9.3
Calcium Phosphate	9.0
Calcium Carbonate	10.6
Magnesium Phosphate	8.4
Ferric Oxide	3.0
Alumina and Loss	5.0

Similarly, the precise change produced by alkalies and acids has not been determined and the extent to which such treatment may be carried without injuring the strength and lasting properties of the fabric is now rather a matter of observation and practical experience than an actual science. For a knowledge of the impurities present in crude cotton, we are indebted to a study of these bodies by E. Schenck. About 5 per cent. of the original fiber is removed by boiling in soda ash for eight hours and may be thrown down from the resulting dark brown liquor as a copious, light brown precipitate by adding an excess of dilute sulphuric acid. If dried, it produces a brittle, horn like mass which leaves upon incineration an ash vary-

ing from 2.3 to 6.9 per cent. From this residue Schenck succeeded in isolating substances which he classifies as follows:

1. A wax-like body which he named cotton wax. It is lighter than water, is soluble in ether and alcohol, but insoluble in water and only slightly dissolved by boiling dilute caustic soda.

2. A fatty acid which melts at 55.5° Centigrade and may be either margaric or a mixture of stearic and palmitic acids.

3. Two nitrogenous, amorhous, brown coloring matters, one of which is easily soluble and the other sparingly soluble in alcohol.

4. Pectic acid, obtained in the form of a light yellow amorphous substance resembling gum or gelatine. This body forms much the larger part of the precipitate, the other constituents being present only in extremely minute quantities.

5. Albuminous matter.

Many others have studied more or less thoroughly the nature of the substances extracted by water, ether or other solvents, as well as the nature of the ash present in the raw cottons, but without more definite results.

In cotton bleaching, we are confronted with the problem of the removal of these various impurities and of the decolorizing or whitening of any yellow or brown tint still remaining. Broadly speaking, the process consists of boiling with alkali liquors to remove all impurities made soluble by such treatment and a subsequent oxidation for the removal of residual tint.

Cotton may be bleached in almost any form from loose or raw cotton to cotton piece goods, the difference in treatment required in each case being purely mechanical. As the bleaching of cotton piece goods far exceeds the importance of the bleaching of any other form of cotton, we will confine our attention to that form. We will also assume in the succeeding remarks a knowledge on the part of the reader of the terms and processes of practical bleaching. The complete process used with slight modifications for the past fifty years may be outlined as follows:

1. Singeing.

2. Grey Wash. Wet out in washing machine, allow to lie for 24 hours and wash.

3. Lime Boil. Pass through milk of lime and boil for 12 hours under pressure.

4. Lime Sour. Wash and pass through hydrochloriceacid at 3° Twaddle, squeeze and allow to lie in sours for 6 to 8 hours. Wash thoroughly.

5. First Lye Boil. Boil 6 to 8 hours with soda ash and resin soap. Wash in kier and through washer.

6. Second Lye Boil. Boil in kier as for first boil using soda ash and a small amount of caustic. Wash in kier and through washer.

7. Chemic. Pass through hypochlorite of lime solution at 1/2° to 1° Twaddle. Allow to lie in chemic from 6 to 8 hours.

8. Sour. Wash and pass through sulphuric acid at 1° to 2° Twaddle.

9. White Wash. Wash until all traces of acid are removed, open and dry. This process in practice will occupy from 5 to 10 days.

The first step in the process of bleaching cloth for printing or other purposes requiring a smooth face is the operation of singeing, which has for its object the removal of all loose hairs from the surface of the cloth. This step is largely mechanical, but requires close attention to produce satisfactory results without damage to fiber or undue cost for gas or fuel. The most approved method, known as gas singeing, passes the fabric at speed several times through the flame of Bunsen burners extending the width of the cloth. Improvements in this step must come from proper regulations of the gas mixture and mechanical arrangement of rollers and speed of travel to produce the most efficient results.

The next operation is known as steeping or grey washing and consists in passing the goods through a washer or otherwise saturating, preferably with warm water, and allowing it to remain piled in a warm room from 18 to 24 hours. This treatment removes any bodies soluble in water and, as a result of fermentation, the starchy matters added as sizing.

Modern practice has made the mistake of considering this operation unnecessary and

omitting it entirely even when the caustic boil is used. Lime probably removes the starchy matters completely, but it is extremely doubtful if more than a relatively small portion is extracted in the caustic boil.

(To be continued.)

IMPORTANT POINTS IN WET FINISHING

BY ELMO

In the wet finishing of woolens, so much depends upon the good judgment of the finisher, to regulate the work as may be demanded by the varying conditions, that it is quite impossible to give any definite rules of procedure, but there are some important points upon which advice may be safely given and profitably followed.

There is nothing connected with the work that is more important than the preparation of the soap for fulling and scouring. Fulling being the first mechanical process, it is important to start right, and this calls for a proper preparation of the fulling soap. The alkaline strength of the soap should be sufficient to saponify thoroughly the grease contained in the goods, and the body should be sufficient to hold in suspension all the foreign matter until the fulling is complete, as well as to retain its consistency throughout the process to insure perfect felting.

The actual test of the soap in the process is the only method of determining its adaptability, and the finisher should study the effect to know if its action is correct. If it fails to cut the grease the fulling will be irregular and imperfect, and if it is not rich enough in the body it will result in poor felting and possible chafing.

Having determined upon these points, it is equally important that the soap preparation be sufficiently boiled. Even with the right proportions of ingredients, it may fail to do good work if not thoroughly boiled; for there is then danger of its "going to pieces" in the fulling mill, or even in the tank before using, when it will assume a watery and curdled appearance that forebodes trouble.

In applying the soap in the fulling mills, it should be turned on to the cloth very slowly, so that the moisture may be uniform, otherwise uneven fulling may result. By far the better way to soap the goods is to use a soaping machine. This can be adjusted so as to give just the right moisture from the start, insuring uniform work and a saving of time. This machine possesses other advantages which are worth considering. The thorough saturation and squeezing of the cloth aids in starting the dirt and grease, and the fulling begins more promptly, and the fulling mills are always free from the filth produced by the surplus soap that accumulates when the soaping is done in the mills.

The moisture of the cloth should be such that the soap will appear upon the cloth by giving it a gentle wring, and where there is much fulling, additional soap will be required as the cloth becomes dry from running.

The fulling is advanced in proportion to the heat produced, but should be regulated in order to obtain the best results. An excessive heat will endanger the colors and possibly the strength of the fiber, but a more moderate warmth insures a better felt and avoids a sponginess which hurried work will often produce. In fulling goods requiring a heavy felt, a low temperature is advisable, but whatever the fabric, a uniform temperature should be the rule. Allowing some pieces to run warm and others cool will give results that will mean a variation in the finish.

If the cloth is to be flocked the pieces should be tacked, sewing the selvages together with the back of the cloth out. This is best done by the use of the tacking machine, but may be done by hand. The old method of running the cloth dry and applying all the flocks before soaping is a mistake, because when the goods are soaped the flocks begin to roll up into little "pellets" and become felted before the cloth is ready to full. The better way is to wait until the cloth has begun to full, then add the flocks at intervals, never allowing the quantity to exceed what the cloth can take up. By this means there will be no waste of flocks, and the best results will follow.

Tacking of the goods is also advisable where the selvages are inclined to roll, and

if they are not to be flocked they may be tacked face out if inclined to roll toward the face. By having the side toward which they roll outward, each selvage inclining to roll holds the other from doing so.

The traps or shrinking boxes of the fulling mill give any desired result as to shrinkage in length, when intelligently used. In the finishing of goods requiring a good felt, such as face finished cloths, meltons, etc., much of the excellence of finish is due to the use of these traps. To get the best results, the shrinking in length should be in conjunction with the shrinkage in width:—that is, should be regulated so as to continue as long as possible during the process. If the fulling in length is forced up at the beginning of the work, and the traps then taken off for a greater part of the time, the fibers of warp and filling will not unite so well, and the felt will not be as compact as where the fulling in both directions is continuous throughout the whole process, or as nearly so as possible. By marking off a yard near the end of the cloth, and measuring often, the shrinkage in length may be as desired, if intelligently regulated by the use of the weights that are supplied for that purpose.

Frequently in the finishing of light weight cassimeres, crashes, dress goods, etc., the traps are not used, and by the use of the stretchers there may be a gain in length from the woven cloth.

By the combined use of the stretchers and traps it is possible to secure the advantage of a better felted cloth, and yet retain the length; or a limited amount of shrinkage in length may be secured and the cloth drawn out again to its former length afterward, thus getting a better felt and yet retaining the length. Cloth that requires considerable fulling may be taken out and "overhauled," or shaken out and allowed to cool somewhat, to avoid mill wrinkles.

In the scouring there is no set rule that can be relied upon. If the goods are very dirty, it is best first to rinse off with warm water to get rid of the most of the foreign matter that has been loosened up in fulling. If not heavily loaded with dirt, as in the case of white and other light goods, a little additional soap, or even warm water, may serve to get up a good lather to start. After the cloth has run about twenty minutes in the first soaping, it should be rinsed off with warm water and a second soaping given. After having lathered up well for about twenty minutes, it should be rinsed with warm water until the soapy appearance ceases, when cold water should be used for about thirty minutes. This should be varied according to the judgment of the finisher, who can best determine the needs of the case in hand.

The procedure in gigging is necessarily as varied as the kind and quality of goods made. Cassimeres that are made largely in the loom, and have but little fulling, often require little or no gigging, and the amount of work required increases in proportion to the amount of felt that covers the face of the cloth. Upon this class of goods the gigging should be sufficient to raise the fibers that are felted over the face of the cloth, so as to admit of a bright and clear face after shearing. Where the cloth is heavily felted, it should be reversed, gigging in opposite directions, changing once or twice during the operation. If a double cylinder gig is used, the result may be accomplished by running the cylinders in opposite directions, finishing with both one way.

Whatever the goods, the work must begin with old, well worn teasels, and better work substituted as required. After considerable nap has been produced, better teasels are required to reach through it, working at the bottom to insure good work. Goods requiring a steam or luster finish should have as thick nap as possible, and the changing from a poor to better grades of teasels should be careful and systematic. All the fibers composing the felted surface of the cloth should be raised to produce the nap.

It is a mistake to suppose that the luster is produced solely by the steaming process. Without a good nap and a parallelism of the fibers the highest luster cannot be secured. Where the wire napper is used for raising the nap, the work should be governed so as to secure the same results as the gigging would produce. To determine when the gig-

ging is sufficient, part the nap carefully, and if the threads show up clearly no more gigging will be required, except upon the wet gig, lay the nap thoroughly preparatory to steaming.

In using the steaming machine, wind the cloth as tightly as possible and steam from eight to twelve minutes on each cylinder, according to the weight of the goods and the number on the cylinder. Cool off after each steaming, and finally wind onto the wooden roll and stand on end to cool. After a few hours change the roll end for end and allow to stand a few hours longer, when the pieces may be taken off and sent to the dye house. After dyeing a few runs will be required on the wet gig or brush to straighten the nap. A brushing after extracting, and before drying, is desirable.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 129

LIGHT BROWN ON UNION DRESS GOODS

Light Brown on 100 lbs. union dress goods. Prepare the dye bath with

7⅕ ozs. Tetrazo Chlorine Orange R.
6⅖ ozs. Tetrazo Chlorine Yellow G.
3⅕ ozs. Tetrazo Chlorine Fast Blue 2B.
⅘ oz. Alizarine Brown R.
(American Dyewood Co., 84 William St., N. Y.)
15 lbs. Common Salt.

Enter at 140° F., raise to a boil in one-half hour, boil 20 minutes, and rinse. The above dyeing represents a line of colors especially adapted for producing in union fabrics fashionable shades of extreme fastness to light. Further particulars will be found in their new shade card No. 139T, a copy of which will be furnished on application.

Recipe No. 130

BLUE ON COTTON YARN

Cupramine Brilliant Blue R B on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Cupramine Brilliant Blue R B.
(Kalle & Co.)
30 lbs. Glauber's Salt. Calcined.

Dye at a boil for 3/4 to 1 hour. Then after-treat in a separate bath made up with

3 lbs. Copper Sulphate,
1 lb. Acetic Acid

for twenty minutes, at a temperature of about 120° F.

Cupramine Brilliant Blue R B, when used as a direct blue, possesses good fastness, but when after-treated with copper sulphate, the fastness to light is very much increased.

Recipe No. 131

BROWN ON COTTON YARN

Dark Orange on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Dark Orange.
(E. M. Thayer & Co.)
20 lbs. Common Salt.

Dye at a boil for one hour.

Dark Orange possesses the usual properties of such substantive colors, and is particularly useful for drabs and slates. It dyes very level.

Recipe No. 132

BLUE ON WORSTED YARN

Azo Fast Blue B on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Azo Fast Blue B.
(Cassella Color Co.)
20 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter at 140° F., and dye at a boil for one hour.

Azo Fast Blue B possesses very good fastness to light, alkalies and carbonizing.

Recipe No. 133

DARK WINE ON UNION DRESS GOODS

Dark Wine on 100 lbs. union dress goods. Prepare the dye bath with

12 ozs. Tetrazo Fast Blue 2 B.
2 lbs., 14 ozs. Tetrazo Scarlet F.
1 lb., 3⅕ ozs. Tetrazo Fast Lilac B O.
⅗ oz. Brilliant Alizarine Blue L A.
½ oz. Tartrachrome Navy Blue B.
(American Dyewood Co., 84 William St., N. Y.)
15 lbs. Common Salt.

Enter at 140° F., raise to a boil in 1/2 hour, boil 20 minutes and rinse. The above dyeing represents a line of colors specially adapted for producing on union fabrics fashionable shades of extreme fastness to light. Further particulars will

be found in their new shade card No. 139T, a copy of which will be furnished on application.

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Recipe No. 134

ORANGE ON COTTON YARN

Direct Orange R on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Direct Orange R
(E. M. Thayer & Co.)
20 lbs. Common Salt.
Dye at a boil for one hour.

Direct Orange R possesses the usual properties of the direct cotton colors, and is particularly useful in the dyeing of light shades for salmons, and for reddening other colors. It dyes very level and goes on slowly.

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Recipe No. 135

OLIVE ON COTTON YARN

Thioxin Olive B O O on 100 lbs. cotton yarn. Prepare the dye bath with

7 lbs. Thiozine Olive B O O.
(Geisenheimer & Co.)
9 lbs. Sodium Sulphite. Crystals.
3 lbs. Sodium Carbonate.
20 lbs. Glauber's Salt.

Enter just below the boil and dye at this temperature for one hour.

Thioxine Olive B O O possesses very good fastness to light, cross dyeing and washing, and will be found to possess the properties characteristic of the sulphur colors.

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Recipe No. 136

VIOLET ON COTTON YARN

Helindone Violet R Paste on 100 lbs. cotton yarn. Prepare the stock liquor in the proportion of

10 lbs. Helindone Violet R Paste.
(H. A. Metz & Co.)
24 gals. Hot Water.
3½ lbs. Caustic Soda Solution, 40° Be.
3 lbs. Helindoil.
4 lbs. Hydrosulphite M L B Conc. Powder.

The latter is added gradually with constant stirring and the temperature should be kept at or below 130° F. Reduction is complete in 1/4 hour and is indicated by the olive green color.

The dye bath is prepared by adding

8 ozs. Hydrosulphite M L B Conc. Powder.
10 ozs. Caustic Soda Solution, 40° Be.

to the necessary amount of water. Stir thoroughly and then add, and thoroughly rake in, the stock liquor.

The dyeing should be done at a temperature of 140° F. for at least 1/2 hour, preferably on bent sticks. After the dyeing the material is well squeezed, allowed to oxidize in the air for 15 minutes, and then soaped at a boil for 1/2 hour in a bath made up with two parts of soap per 1,000 parts water.

Helindone Violet R Paste gives a brilliant shade of violet possessing remarkable fastness to light, boiling and washing, and will also stand the chlorine bleach.

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Recipe No. 137

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Helindone Violet B Paste gives a brilliant shade of violet possessing remarkable fastness to light, boiling and washing, and will also stand the chlorine bleach.

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Recipe No. 138

BLACK ON COTTON YARN

Puretone Black Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Puretone Black Conc.
(F. E. Atteaux & Co.)
30 lbs. Common Salt.
1 lb. Sodium Carbonate.

Dye at a boil for one hour.

Puretone Black Conc. produces a very good black which possesses the properties characteristic of the direct cotton colors.

Recipe No. 139

REDDISH BROWN ON COTTON YARN

Azerole Brown G O on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Azerole Brown G O.
(Innis, Speiden & Co.)
20 lbs. Common Salt.

Enter at 160° F., bring slowly to a boil, and dye at a boil for one hour. Azerole Brown G O gives a very reddish shade of brown, almost an orange, and it will be found useful in the dyeing of compound shades.

Recipe No. 140

BROWN ON COTTON YARN

Thio Brown R on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Thio Brown R.
(W. F. Sykes & Co.)
10 lbs. Sodium Carbonate.
100 lbs. Common Salt.

Enter the material at a boil, and dye at boil for from 3/4 to 1 hour.

Thio Brown possesses good fastness to light, washing and acid.

Recipe No. 141

BROWN ON COTTON YARN

Thio Brown on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Thio Brown.
(W. F. Sykes & Co.)
10 lbs. Sodium Carbonate.
100 lbs. Common Salt.

Enter the material at a boil, and dye at boil for from 3/4 to 1 hour.

Thio Brown possesses good fastness to light, washing and acid.

Recipe No 142

BLUE ON COTTON YARN

Brilliant Fast Blue 4 G on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Brilliant Fast Blue 4 G.
(Farbenfabriken of Elberfeld Co., 66 Lafayette St., N. Y. C.)
2 lbs. Soda Ash.
40 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Brilliant Fast Blue 4 G possesses excellent fastness to light and good fastness to alkalies and organic acids.

Recipe No. 143

BROWN ON WORSTED YARN

Palatine Chrome Brown W N R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Palatine Chrome Brown W N R.
(Badische & Co.)
20 lbs. Glauber's Salt. Calcined.
8 lbs. Acetic Acid.

Enter the material at 120° F., bring to a boil and dye at a boil for 3/4 of an hour, finally adding

1 lb. Sulphuric Acid,

and boiling to exhaust the bath. After-treat in a bath made up with

1½ lbs. Potassium Bichromate,

and boil for 1/2 hour longer.

Palatine Chrome Brown W N R possesses good solubility, its fastness to light is very good, and its fastness to washing, milling and acids is good.

Recipe No. 144

BLACK ON COTTON YARN

Naphtamine Fast Black K S on 100 lbs. cotton yarn. Prepare the dye bath with

6½ lbs. Naphtamine Fast Black K S.
(Kalle & Co.)
1 lb. Soda Ash.
30 lbs. Glauber's Salt. Calcined.

Dye at a boil for one hour. Then diazotize by working for twenty minutes in a cold bath made up with

3 lbs. Nitrite of Soda.
5 lbs. Sulphuric Acid.

Rinse in cold water, then develop by working for twenty minutes in a cold bath made up with

1½ lbs. Beta Naphthol, dissolved in
1½ lbs. Caustic Soda Solution, 40° Be.

Naphtamine Fast Black K S possesses excellent fastness to light, and is recommended for the dyeing of greys and mode shades, which must possess superior fastness to light.

In 1909 Spain exported 2,581,845 pounds of underwear, valued at $2,534,903, and 220,827 pounds of hosiery and gloves, valued at $271,015. The imports of these goods amounted to little less than $250,000, two-thirds of which came from Germany.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Centrifugal Pump. The Goulds Mfg. Co., Seneca Falls, N. Y., have placed on the market an improved line of centrifugal pumps described in another part of this issue.

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Cloth Testing Machine. Henry L. Scott & Co., Providence, R. I., have recently brought out an improved cloth testing machine which is described in another part of this issue.

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Improved Shoddy Picker. C. S. Dodge, Payne St., Lowell, Mass., has recently placed on the market an improved model of his well known shoddy picker. It is provided with a condenser which dispenses with the gauze room for receiving the stock. It also has a carrier for conveying the bits and flyings from the back of the machine to the apron.

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Mercerizing Knit Goods. P. P. Wolf, Chemnitz, Germany. A stretching attachment for mercerizing hosiery and other knit goods.

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Loom for Weaving Manifold Fabrics. Leopold Gruenhut, Paris, France, has recently developed a loom for weaving a number of fabrics one above the other at the same time.

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Stop Motion for Warpers. Gebrueder Sucker, Gruenberg, Germany. An improved stop motion for warpers by which the machine is stopped when a thread breaks.

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Weighting Silk. Landau & Co., Vienna, Austria. An improved method of weighting silk by which the strength and elasticity of the filament is not in any way injured.

Knitting Machine. Claes & Flentje, Mulhausen, Thuer., Germany. A flat knitting machine driven by power and improved over former types in a number of particulars.

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Combing Machine. Charles Arsene, Fourmies, France. A combing machine adapted for either cotton or wool and which it is claimed is capable of an increased production and an improved quality of work.

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Shuttle Box. Carl Klein, Goeteborg, Sweden. An improvement in loom shuttle boxes designed to prevent rebounding or displacement of the shuttle.

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Stop Motion for Fulling Mills. L. Ph. Hemmer, Aachen, Germany. An improved stop motion for fulling mills by which the machine is brought to a stop in case of the knotting or tangling of the goods in the mill.

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Braiding Machine. W. & M. Ostermann, Barmen, Germany. A braiding machine embodying improvements in the stop motion and tension device for the yarn.

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Drawing Machine. J. J. Rieter & Co., Winterthur, Switzerland. An improved method of shifting the belts on the comb pulleys of drawing machines.

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Braiding Machine. Ed. Molineus, Barmen, Germany. An improved stop motion for braiding machines which is said to offer a number of advantages as compared with former devices of this kind.

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Splicing Horsehair. R. Grabein, Forst, Germany. A machine for splicing horsehair in order to make a continuous filament.

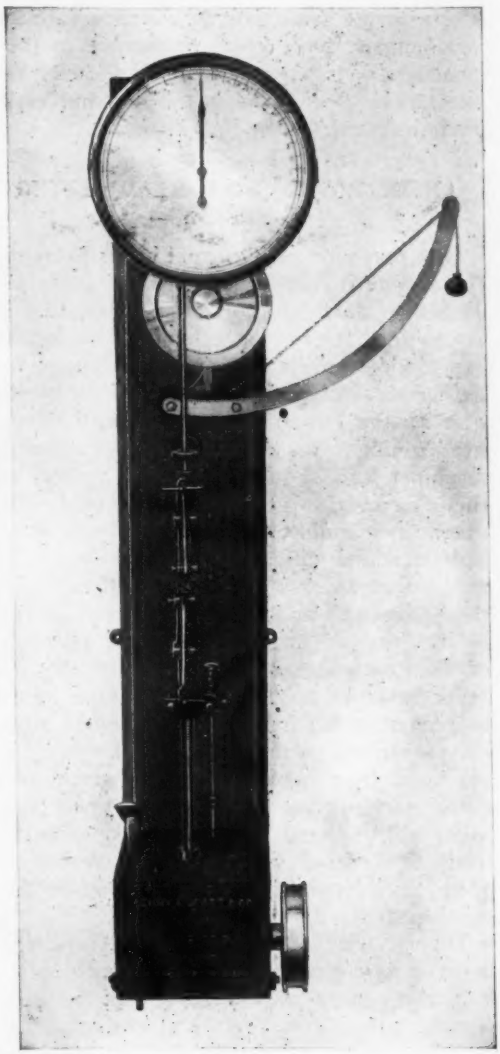
AN IMPROVED CLOTH TESTING MACHINE

A new cloth tester of the dead weight principle has been placed on the market by Henry L. Scott & Company, Providence, R. I., in addition to their already extensive line of testing apparatus. The firm has designed this tester to operate quickly, easily and according to the specifications of the largest users of cloth testers in this country. The machine has the dead weight lever principle head and a white enamel dial behind glass. A double pawl or latch on a single rack insures close readings, while ball bearing suspension of the weight lever gives delicate poise and adjustment.

In both the hand and power operated cloth testers the thrust is taken on ball bearings running between hardened steel raceways. In the hand operated machine, the gears are of the spiral cut spur type, and are driven by a 6-inch hand wheel, thus insuring very easy and smooth action. In the power machine, shown in illustration, the stretching device is much the same as in the power yarn tester which was described recently in this magazine. An upright rod extends upward from the case, behind and a little to one side of the lower clamp, and is connected with the clamp by means of a bracket sliding on the rod. Two collars on the upright, adjustable at the will of the operator, regulate the length of the stroke. A small lever is provided to start the mechanism after the sample is clamped in position.

The speed of the downward stroke is 12 inches per minute, and the upward or reverse stroke is at the rate of 36 inches per minute. The drive on the downward stroke is by a positive toothed clutch, and on the upward stroke by a cone friction. The machine is large, strong, and free from delicate parts and adjustments. While both types of machines are made and guaranteed by the firm, they recommend the power tester as the more accurate, due to the fact that the steady movement of the lower clamp during the test is very essential. Absolutely fair tests cannot be made by hand on this account, except by the most skilled of operatives.

The clamps are of a new design which permits of great pressure on the sample without excessive strain on the screw of the clamp. The grips are flat, and therefore cannot possibly cut the sample. The standard machines are made with jaws 1 inch wide, and the construction admits of half-inch grips being substituted for heavy materials. The clamps are also provided with large openings be-



IMPROVED CLOTH TESTING MACHINE DRIVEN BY POWER.

hind the clamping surfaces, allowing the handling of large samples without the necessity of cutting. This point is of great importance in testing cloth, as it is often desirable to make several tests each way of the cloth on the same sample. Henry L. Scott & Company have great confidence in their products and ship on approval, allowing the machines to tell their own story and make their own sales.

AN IMPROVED SPOOL HEAD GLUING PRESS

The press for gluing spool heads shown in the accompanying illustration, is built by the Defiance Machine Works, Defiance, O. It is designed for the use of spool manufacturers to press the spool discs or flanges together after they have been provided with glue on the Defiance No. 1 automatic spool head gluing machine. They are companion machines and should be used together, as they have the same capacity and one operator should handle both machines. This machine differs in construction from any other press heretofore offered for the purpose, and it is very powerful. It is capable of exerting a pressure of 60,000 pounds, which is necessary in order to make thoroughly tight glue joints to prevent them from springing apart after they are fitted to the spool. If the stock is seasoned from which they are made and these machines are employed, no open glue joints will be found, while previous to the introduction of our machines spool heads, or open joints, have proven a serious loss to the spool-makers.

The capacity of this machine is exceedingly large and will accommodate work up to a diameter of 12 inches. As fast as the glue is put on the discs they are at one handling by the operator of the gluing machine slipped over a steel spindle which will accommodate a sufficient number of discs to fill a space 34 inches long, or less. When the spindle has been filled with discs they are placed into this machine and pressed up tightly to their proper place. Then with the pressure on a key is placed behind a collar through a hole in one end of the shaft and locked in position. The screw in the press is then reversed, which releases the work from the machine. The spindle with the discs clamped between the collars is then taken from the machine and allowed to dry and set, and the operation is then repeated. The number of disc spindles necessary will depend upon the capacity required.

The frame of the machine is of modern design, cast in one piece, with core center, and of sufficient strength to do the work with ease, without injury to the working parts. The steel screw, four inches in diameter, is driven by a powerful double friction clutch in connection with heavy cut gearing. By a slight touch of the friction lever convenient to the operator the screw can be run in either direction. The frictions are fitted

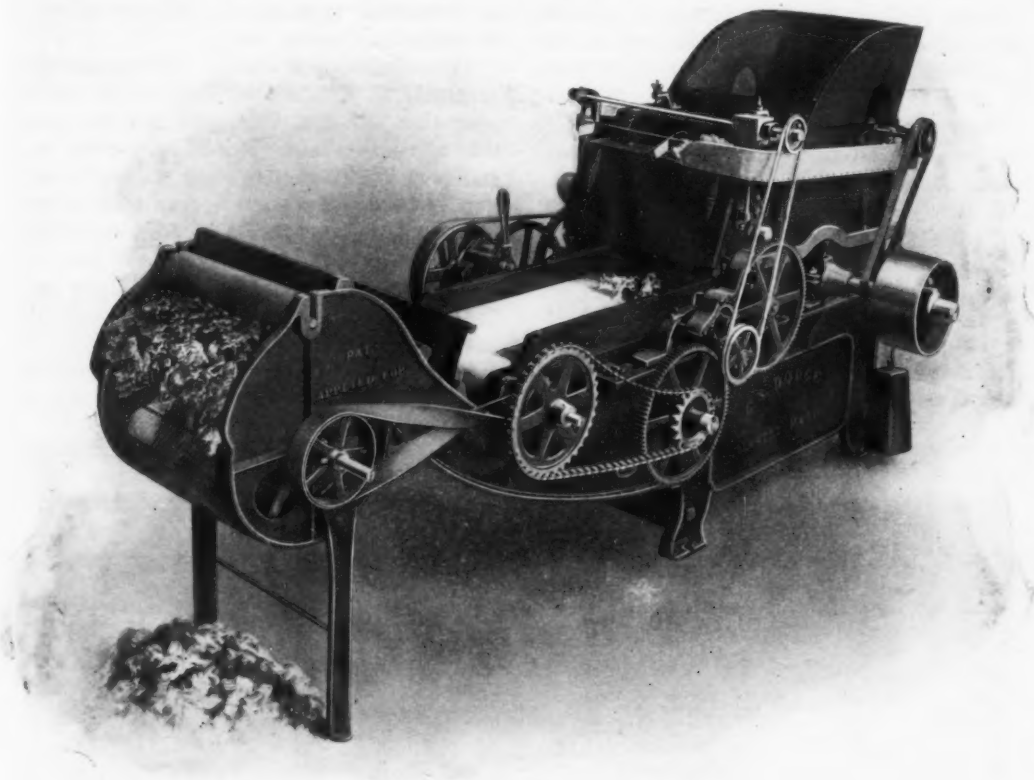
AN IMPROVED SPOOL HEAD GLUING PRESS.

with an automatic brake, so that the operator has complete control over the machine from the working side, starting or stopping instantly and securing any amount of pressure required, depending upon the nature of the work. The tail stock, against which the pressure is applied, is thoroughly gibbed to the top of the frame and it can be adjusted horizontally on the frame for short or long work. A heavy steel pin fits through it and the bed into reamed holes. A number of holes are provided for various adjustments. All the working parts of this machine are accurately fitted with sliding surfaces scraped to bearing, and the working parts are exceedingly large and strong.

The 22 female weavers employed in an Australian mill averaged $9.73 per week. Among these were eight Yorkshire women; their average earnings were $10.95. The lowest earnings of an expert weaver were $9.08, and the highest $13.96, all at piece work.

THE LATEST DODGE SHODDY PICKER

The illustration shows the latest Dodge shoddy picker with condenser, built by C. S. Dodge, Lowell, Mass. This picker does away with the expensive fire-proof gauze room, thereby saving space and reducing the liability of fire to a minimum. The picked stock is always in sight of the operator and leaves the condenser in a lap so that it can be easily removed. Simple in construction this condenser is a decided improvement over the old style of condenser. The Dodge picker has been in use for more than twenty-five years, during which time improvements have been made from year to year, so that in its improved and up-to-date form its merits are now thoroughly recognized. It is adapted to the finest and coarsest of work.



THE LATEST DODGE SHODDY PICKER.

Machines of this class continually throw bits and flyings to the rear of the machine, and these bits, flyings and unopened stock are usually allowed to remain on the floor at the rear of the picker until a considerable quantity of them has accumulated, when they are again placed upon the feed apron by the armful or basketful. This feeding of the bits into the machine in large quantities at intervals renders the product uneven. The bits should be fed on the apron gradually, as they are made, and picked with the original stock. For this purpose the Dodge picker has a bit attachment, a device for returning to the feed apron the bits and flyings thrown from the rear of the machine. It accomplishes this result by constantly returning the bits as they issue from the machine to the feed apron, and mixing them with the larger and longer stock as it first

enters the machine, thus securing a more uniform product.

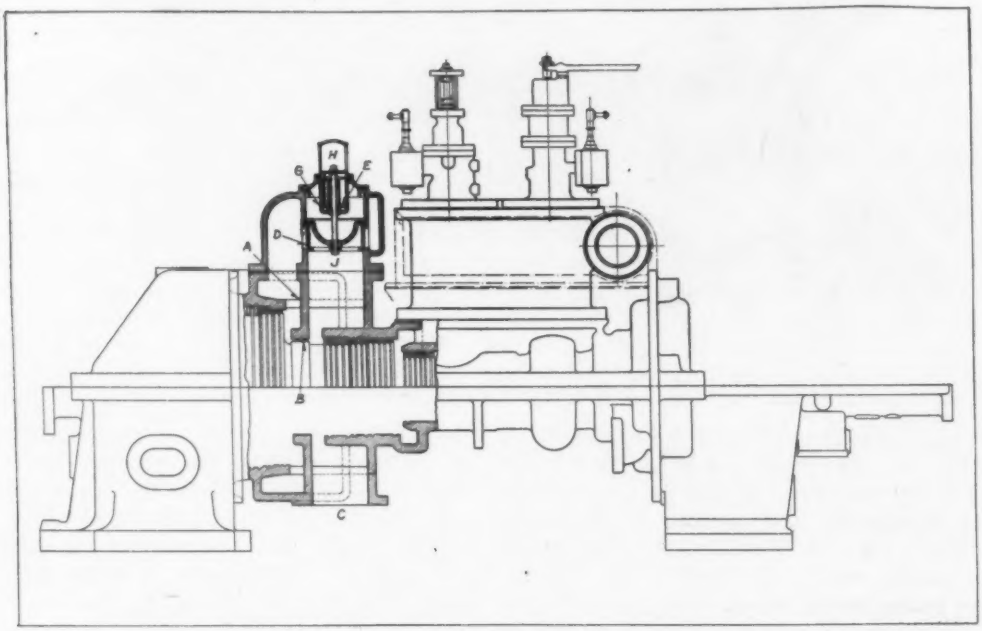
The openings through which the bits are discharged is covered by a hood, through which runs a trough just back of the opening, the trough leading from the rear of the picker along the side of the bonnet and over the feed apron. An endless belt runs constantly through the trough, and is provided with wings or carriers which convey the bits and flyings in the trough to the front of the machines and drop them upon the feed apron. The workmanship of these pickers is of the best and all the fittings and parts are of standard size and can be immediately duplicated.

WESTINGHOUSE AUTOMATIC BLEEDER TURBINE

Being of direct interest to the members of the National District Heating Association, the Westinghouse Machine Company exhibited during the inspection trip of this Association to their works on June 7, 1911, the detail features of one of their new developments in steam turbine design, known as the automatic bleeder turbine.

Its principal advantages result from always using the steam economically before diverting it to the heating system, and at the same time being capable of automatically supplying large quantities of atmospheric or low pressure steam for central distribution of industrial applications without affecting its electrical output.

The illustration shows a diagrammatic sectional detail and a description of its operation follows. Generally, the design of the bleeder turbine closely resembles the standard Westinghouse single flow construction. The division wall, A, is introduced and strip packing provided at, B, forming a labyrinth with no mechanical contact. Thus the steam leaving the intermediate stage may flow into the heating system through the nozzle, C, or else with a reduced heating demand, a part of the steam passes through the valve, D, and performs work in the law pressure section. The automatic valve, D, is controlled by predetermined pressure in the heating system and the requisite balancing



ARRANGEMENT OF STEAM TURBINE WITH BLEEDER CONNECTION AND CONSTANT PRESSURE VALVE.

dead weight on the upper side, H. The piston, E, enclosed in an oil-filled chamber, G, is provided to dampen any sudden movement due to pressure fluctuations. Thus if the pressure in the heating system is fixed at 18 pounds abs. and the pressure at the end of the intermediate section tends to rise due to an increased turbine load, the valve opening will increase, by-passing a greater portion of the steam to the low pressure stages. On the other hand, if the load decreases and the pressure at, J, falls, the valve opening will decrease until the pressure is again built up to 18 pounds.

The Westinghouse Machine Company, East Pittsburg, Pa., are the patentees and manufacturers of this type of turbine.

ELECTRIC POWER FOR TEXTILE MILLS

Electric power is rapidly gaining in favor among manufacturers in all lines. Whether used individually for each machine or one motor for a group of machines the electric motor has proved its merits. It is always ready at the turn of a switch and the expense stops the minute the machine stops. With the increased demand for motors, competition in their manufacture has increased accordingly, and like everything else, there are bound to be degrees of quality and efficiency.

Prominent among the builders of small motors is The Mechanical Appliance Co., Milwaukee, Wis., who make the well-known Watson motor, which is extensively employed in the small motor field because of its compactness and efficiency. Watson motors include all sizes from 1/4 to 30 h. p. for alternating current and from 1/4 to 15 h. p. for direct current.

Fig. 1 shows one of the many textile mills where Watson motors have been installed with highly satisfactory results. The Watson was chosen by the Phoenix Knitting Works because of its smooth-running qualities. The Schubert & Salzer stocking machine is a very fine and accurate piece of mechanism and in this case, being used to knit ladies' fine silk hosiery, must necessarily be operated at a comparatively low speed. The 2 h. p. Watson motors with a speed of only 800 r. p. m. proved so highly satisfactory that they were used on the en-

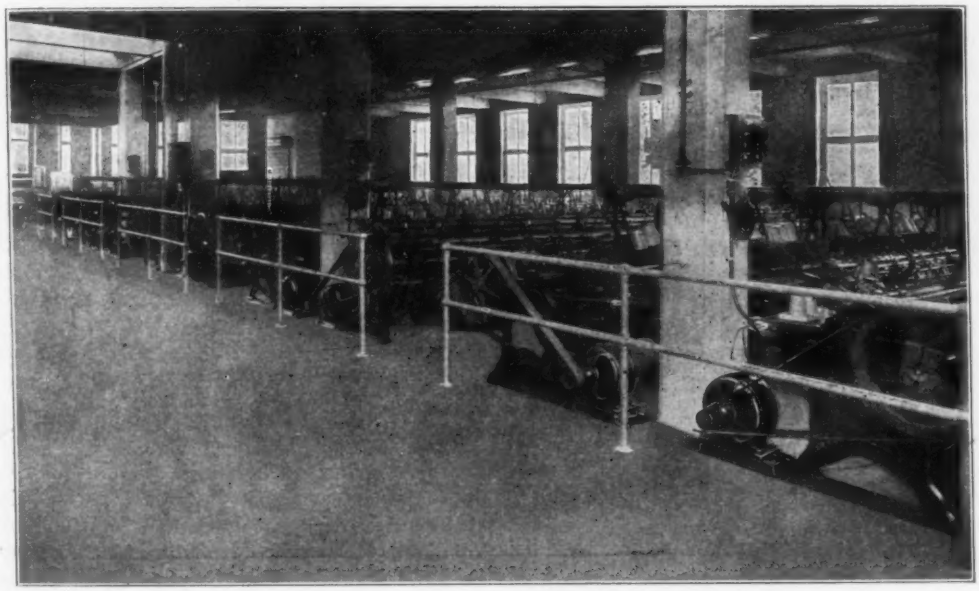


FIG. 1. ONE OF THE MANY TEXTILE MILLS WHERE WATSON MOTORS HAVE BEEN INSTALLED.

tire group of silk stocking machines installed by the Phoenix Works.

Among other prominent textile manufacturers who have found Watson motors the most practical solution of their power problems are the Burson Knitting Co., Rockford, Ill., stocking manufacturers, 25 motors; Helmholtz Mitten Co., Cudahy, Wis., 15 motors; E. L. Mansure Co., Chicago, carpet binding and braids, 55 motors; R. J. Ederer Co., Chicago, fish nets, 50

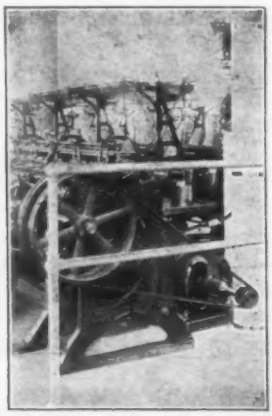


FIG. 2. AN EXTENSION OF THE MOTOR SHAFT TO AVOID THE POST.

motors; Sauqwait Silk Co., Philadelphia, 40 motors.

Fig. 2 shows an extension of the motor shaft to avoid the post. In unusual cases like this, the special engineering service of the Mechanical Appliance Co. is of great value to the manufacturer who requires special installations to meet his peculiar power requirements. Manufacturers who are interested in the power question can gain much valuable information by writing to the Mechanical Appliance Co., Milwaukee, Wis., for their bulletins on motors and their application.

The annual potential consuming capacity of the world's cotton spindles, if running on full time, is placed at 22,500,000 bales of 500 pounds. In 1908-09 there were 6,000,000 less spindles and a consumption of about 19,500,000 bales.

A NEW LINE OF CENTRIFUGAL PUMPS

The Goulds Manufacturing Company of Seneca Falls, N. Y., have just placed on the market an entirely new and improved line of centrifugal pumps. These pumps are furnished in both the single stage, single suction and single stage, double suction types.

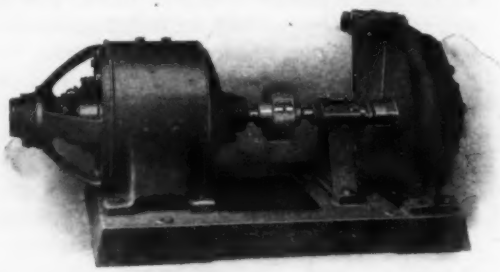


FIG. 1. THE SINGLE SUCTION PUMP.

Either type may be arranged for belt drive or direct connection to electric motor, gas, gasoline or steam engines, steam and hydraulic turbines. The single suction, as well as the double suction pumps, contain many special features which are very important

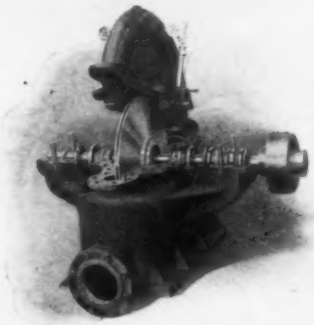


FIG. 2. THE DOUBLE SUCTION PUMP.

motors; Sauquoit Silk Co., Philadelphia, 40 hosiery and knit goods manufacturers.

The impeller in the single suction pump is of the open type. The vanes are carefully designed so that the maximum efficiency is obtained under normal conditions. The impeller is accurately machined to minimize the clearances between the impeller and the side covers. This feature has considerable influence upon the high efficiency which is obtained with this type of pump. Although of

the single suction type, which in most cases means a considerable amount of end thrust, the impeller in the Goulds pump is designed in such a manner that this annoying feature is entirely eliminated. The stuffing box, through which the shaft passes, has a brass water sealing ring which prevents air being drawn into the pump at this point. Air will destroy the vacuum in a pump and impair suction.

The single stage, double suction centrifugal pumps are designed with a view of combining all mechanical details necessary to produce a centrifugal pump of the very highest grade. The casing proper consists of two castings bolted together on a horizontal joint. The purpose of dividing the casing is to permit quick and ready access to the interior parts of the pump for inspection, without disturbing the pipe connections. The impeller is of the most modern enclosed type and developed the highest efficiency under the conditions for which the pump is sold. The bearings are of the ring oiling type independent of the stuffing boxes and they are provided with removable shells lined with the best quality of anti-friction metal. The stuffing boxes are provided with brass water sealing rings.

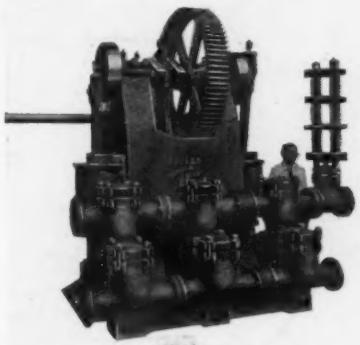


FIG. 3. A NEW HIGH PRESSURE TRIPLEX PLUNGER PUMP.

The double suction pumps are sold for heads up to 150 ft. while the single suction pumps operate against maximum heads of 100 ft. Fig. 1 shows the single suction pumps direct connected to an electric motor. Fig. 2 shows the double suction pump with the upper half of the casing partially removed.

The Goulds Manufacturing Co. have also brought out a new high pressure triplex plunger pump, shown at Fig. 3. This pump, known as Fig. 1585, is similar to the Fig. 1283 type, which is in general use in mines, water works, and with hydraulic elevators, fire protection systems, hydraulic presses, oil pipe lines, etc. The chief difference is in the gearing. As shown by the illustration, the new pump has only one gear and pinion, which are located between the standards. Fig. 1283 had two sets, one on either side of the standards.

Placing the gearing between the standards necessarily lengthened one side of the pump somewhat, and increased the distance between the two valve boxes on that side. Instead of lengthening the pipe connection between the valve boxes on one set and making each set of a different shape as they are in many pumps, a distance piece is put in as shown. In this way the three sets of valve boxes are kept identical in form and interchangeable.

This duplication of parts is a feature of Goulds pumps, which is greatly appreciated by the purchaser, and one that saves valuable time when repairs are needed. It also reduces the number of parts kept in stock by the large user who may be located at a great distance from the factory.

SPLIT LAPS IN CARDING

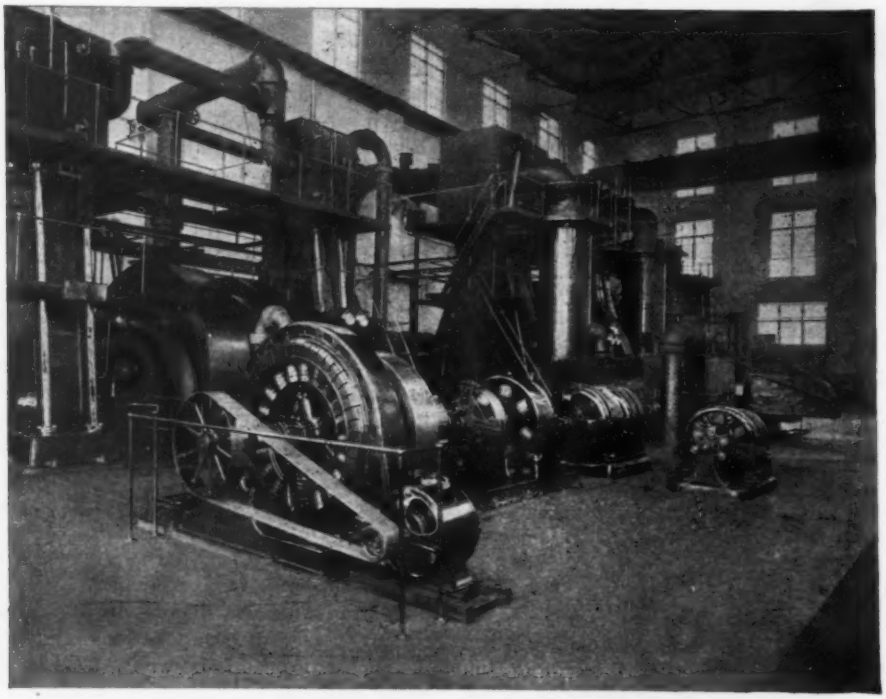
Editor Textile World Record:

Referring to the complaints regarding split and uneven laps, I want to suggest to those who are having this difficulty that they take a number of bales, say 3, 5 or 7, open them up and let them lie exposed until the air gets through them. Then put the cotton through a woolen picker, feeding from each bale in turn until all the cotton is used up. This process will make the cotton as lofty as feathers and when fed on the cards there will be no difficulty with the laps. I hear it said that it cannot be done, but I insist that it can be done and that all this difficulty with laps can be avoided in this way.

Corellac.

HOW DEPENDABLE POWER IS OBTAINED IN THE LARGEST WORSTED MILL IN THE WORLD

The Wood Worsted Mill of the American Woolen Company at Lawrence, Mass., contains nearly 60 acres of floor space, is 1,500 feet long, and six stories high. This mill typifies the latest and most scientific principles of mill construction as regards the welfare, safety and comfort of its employes. Its size, entitling it to be called the largest worsted mill on earth, together with the excellence of its product, have created a great interest in the part of textile men in its power equipment.



THE POWER HOUSE AT THE WOOD WORSTED MILL, SHOWING 5000 KW. CURTIS TURBINE AND 4000, 1500 AND 100 KW. GENERATORS.

POWER PLANT

The power plant contains forty-two 250 h. p. horizontal return tubular boilers equipped with ordinary Foster flat shaking grates. These boilers are divided into two sections of 5,250 rated boiler horse power each. Each section is equipped with two economizers, arranged in parallel, and two induced draft fans with direct connected engines.

The boilers are hand fired at regular intervals by intelligent men with uniform quantities of coal. This goes on like clock work. The men work easily and systematically, there are never more than two doors open in a ten-boiler group at a time, that into which the man is shoveling and that of the furnace which is being trimmed. The firing of alternate doors at considerable intervals insures that one side of each furnace shall be full of seething, white-hot, well coked coal to burn the volatiles from the fresh fuel fired to the other side, and the fire is carried some 14 inches in thickness all over the grates, giving no chance for air to get in without losing its oxygen to the white-hot carbon. If the load is light and coal is not being burned so

fast but that the fires thicken up above 16 inches or so, the number of scoopfuls per firing is reduced; but the firemen can get around fast enough, so that nine scoopfuls at a time will supply all the coal the boilers will use at the greatest rate that they are ever driven.

Instead of trying to regulate the dampers to hold steam pressure sending good carbon monoxide gas (4,450 b. t. u. to the pound of carbon instead of 14,500—good gas engine gas) up the stack, instead of trying to burn it, the air supply is kept so that it will burn the coal. In this way steam pressure might vary between 160 and 145 lbs., but the percentage of carbon dioxide does not drop from 14 to 8 by imperfect combustion as could happen if the damper regulation for absolutely steady steam pressure were used.

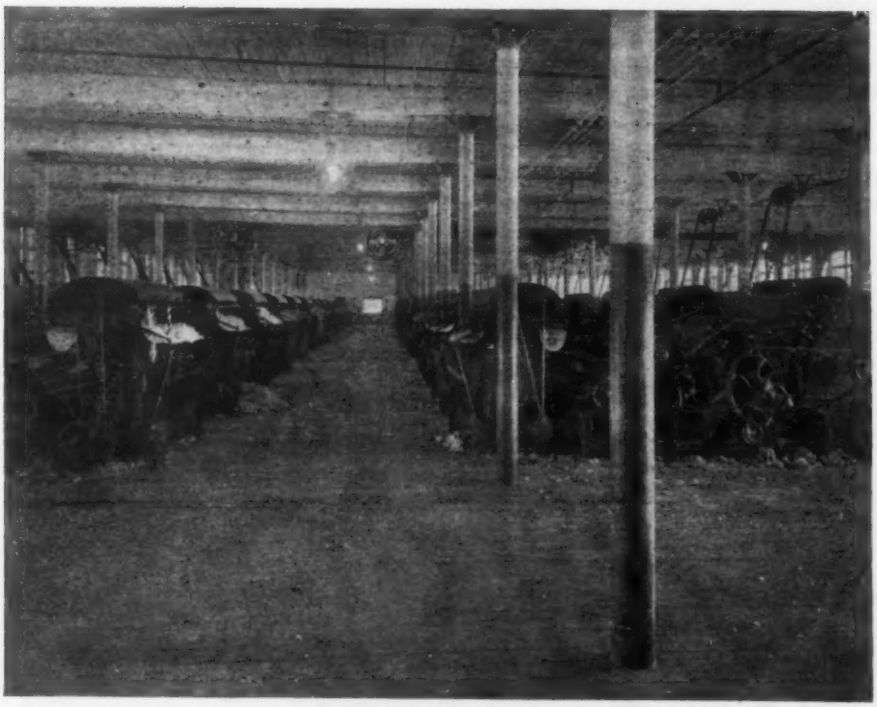
A chemist comes every week for gas samples at unexpected times, and picks his own boilers and fires. These samples average 14.1 per cent. carbon dioxide, 4.5 per cent. oxygen and 0.1 per cent. carbon monoxide.

The gases leaving the economizers go to the stack at 200° (exceptionally low) and the hot well water is raised from 105° to 185°. The gases as they leave the boilers are never up to 500° and a part of the time are less than 400°.

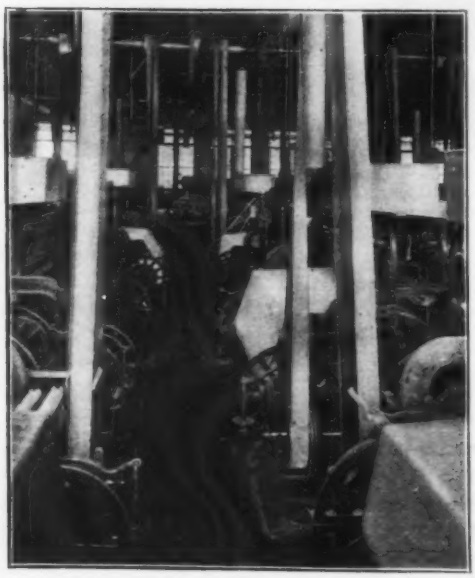
TUNGSTEN ILLUMINATION WITH 60 WATT G. E. MAZDA LAMPS IN SECTION OF FRENCH DRAWING ROOM, WOOD WORSTED MILL.

All of the boilers having twenty-three hundred square feet of heating surface, bought for 200 h. p., are now developing as high as 316 h. p. and in none of the 18 tests was less than 200 h. p. per boiler obtained. The heat insulation is so effective that very little radiation is felt in the boiler room.

The steam generated in the boiler room is used to drive a 5,000 k. w. Curtis steam turbine; a 4,000 k. w. generator driven by a McIntosh & Seymour engine; a 1,500 k. w. and a 100 k. w. General Electric Company direct-connected generator. The latter machine is direct-connected to a 200 h. p. en-



SECTION OF CARD ROOM, DRIVEN BY 175 H. P. FORM L MOTOR, WOOD WORSTED MILL.



SECTION OF WEAVING ROOM, DRIVEN BY 175 H. P. FORM L MOTOR, WOOD WORSTED MILL, LAWRENCE, MASS.

gine. Two 65 k. w. General Electric Company generators are also used as exciters and driven by a 100 and a 90 h. p. motor.

The 100 k. w. generator is used for overtime and Sunday work when the larger units are not needed. A 65 k. w. 240 r. p. m. engine driven exciter can be connected by friction clutch to 100 k. w. generator engine to excite any one of the larger generators until the motor driven exciters are running. In the event of failure of the 65 k. w. exciter, the 8 k. w. exciter is used to excite the field of the 100 k. w. generator which can be used to start the plant. Should the exciter engine fail a belt lying ready can be slipped on pulley of small engine in basement and on the 8 k. w. exciter.

A heavy traveling crane makes quick changes possible while 250 watt G. E. Mazda lamps furnish an abundance of light. The 5,000 k. w. Curtis turbine is arranged so that steam for manufacturing purposes can be

bled at 6 to 10 pounds pressure. The hand-wheels which control the amount of this bled steam extend around first gallery.

Attached to the turbine is a frame which supports the 12,000 ampere circuit breakers. These breakers are considered the largest in the word. Their rating allows ample over-load capacity, permitting continuous operation in event of damage to one of the three brushes of which each leg is composed, and insures a cool running breaker. If this practice of insuring ample overload capacity in breakers was more widely followed, it would materially reduce breaker troubles. These circuit breakers are controlled from generator panel by pull button control switches, and the closed or open position of breaker is indicated by red and green lamps placed above and below the control switch on the switchboard.

The blue Vermont marble switchboard is one of the largest, if not the largest, in the world, and is practically a standard General Electric Company board, 127 feet long.

The distribution system is designed so that one oil switch and one indicating watt-meter are used for each motor larger than 85 h. p. Motors of 85 h. p. and smaller are grouped on one circuit, the total load on which is made to approximate that of a 175 h. p. motor.

SECTION OF TWISTING AND BEAMING ROOM, DRIVEN BY 175 H. P. FORM L MOTORS, WOOD WORSTED MILL, LAWRENCE, MASS.

The oil switches controlling the motors in the various rooms are fastened on beams near the ceiling and are controlled by a cord which hangs down within easy reach of any operative who can promptly stop shafting in case of accident.

The 175 and 125 h. p. motors are all controlled by K-14 non-automatic oil switches. The protection of these motors, as before described, is located on switchboard in power house, while the protection of 85 h. p.

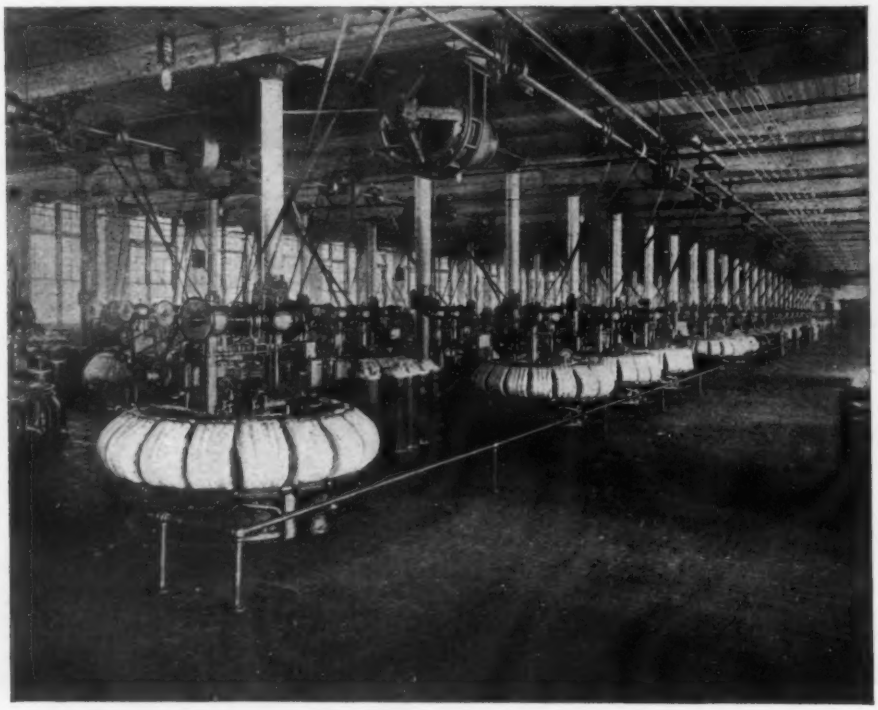
motors and smaller is by K-14 and P-3 automatic oil switches.

All of the automatic switches in the mill are equipped with oil dash pot relays which allow momentary fluctuations of current without opening switch in same manner as large motors are so protected at switchboard. The automatic switches are also equipped with cords extending down to within easy reach of the operatives who can stop motor in case of accident.

The switchboard is so arranged that additions to it can be made by merely adding solenoid operated switches below board with their control switches mounted on panel above. The power plant is well lighted by 250 watt G. E. Mazda lamps with glass reflectors. The 16,000 h. p. of electric motors in this mill are started up by employes who have been carefully trained by the electrical staff of the mill. All motors are blown out once a week with the exception of those in a few rooms, where there is no lint, such as the wet finishing department and the dye house, where they are not blown out more than once in six months.

The distribution between the power plant and mill buildings is by fireproof tunnels and wire towers in each building. The cables used are G. E. varnished cambric lead covered. These project through openings into corridors and rooms and from this point to the motors white slow burning Underwriters' wire is used. Form H oil cooled transformers on outside of building are used for multiple lighting.

The G. E. Mazda illumination has proven a good investment since it abolishes all shadows, enables loose ends to be picked up quickly and surely, and as a net result in-



COMBING ROOM DRIVEN BY GROUP DRIVE FROM 175 H. P. FORM L G E MOTOR, WOOD WORSTED MILL.

creases and improves the average production of each square foot of floor space in this mill. The electric drive was a necessity in this mill because of the large amount of power involved and the desire of the management to locate the power plant at one end of mill for coal handling facilities. Had a mechanical drive been used the extremely large shafts required would have made it necessary to carry an enormous dead load with great loss during overtime operation of a section of the plant. In case of accident too long a time would have been required for stopping the shafting.

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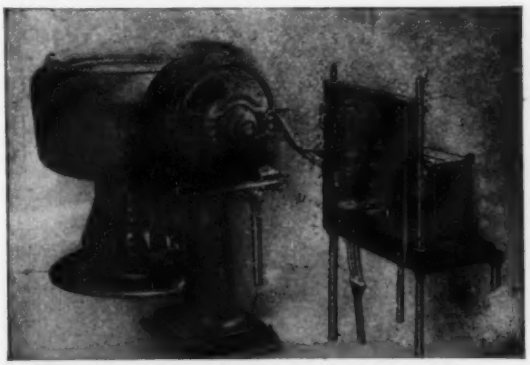
METHODS OF OPERATING HYDRO-EXTRACTORS

By ALBERT WALTON, of the Westinghouse Electric and Manufacturing Co.

(Reprinted from the Electric Journal.)

In textile mills where yarn or cloth is washed or dyed it is necessary to dry the goods before subsequent handling in the other processes. This is usually accomplished in two stages. In the first stage the bulk of the liquid is removed by centrifugal action and in the second the material is completely dried by a slow heating and fanning system. The removal of most of the liquid is usually accomplished by means of a "hydro-extractor" which is essentially a basket, from 24 to 72 inches in diameter, generally of perforated copper, mounted on a vertical spindle which is arranged to be rotated at high speed. Into the basket are packed the wet skeins of yarn or pieces of cloth to the amount of several hundred pounds. It is then rotated about its vertical axis, coming gradually up to a speed of from 750 to 1,000 revolutions per minute. During the first part of the acceleration the skeins or pieces rearrange themselves and start to pack tightly against the walls of the basket. Great care has to be taken to see that none of the goods projects beyond the basket where it can be whipped against projections or strike the operatives standing nearby, as the momentum of the loaded basket is very considerable and a great deal of damage might be caused before the machine could be brought to rest. A friction brake is usually provided to stop the machine to avoid unnecessary loss of time after the drying is completed.

It is very desirable to be able to predetermine the amount of moisture that will be left in the goods so that the speed of the hot air machine may be regulated for maximum results and deliver perfectly dry material without consuming more time than necessary. As the amount of drying done in the hydro-extractor depends almost wholly on the speed and the time of drying and as the time can be made perfectly definite it is evident that the feature of a fixed speed of operation is of importance. With the time of acceleration and running speed fixed, a very definite amount of drying can be accomplished and repeated time after time by duplicating the duration of the cycles of operation.



DIRECT-CURRENT MOTOR AND AUTOMATIC CONTROLLER, DRIVING HYDRO-EXTRACTOR.

The driving of hydro-extractors presents a problem peculiar to itself. The load is intermittent and irregular. To start the loaded basket and accelerate it to its full speed in the brief interval desired, involves a heavy draft of power, while little effort is required to run it at constant operating speed, after it has reached that point. The demands of production require a quick acceleration and it is important that this be obtained as this period of the cycle of operation is in a measure lost time. The length of time full speed is maintained varies in different

installations, but it is usually under ten minutes and most frequently about five.

There are three well recognized methods of applying the power—by steam engine, by belt and electric motor. The steam drive has some points of advantage, principally, however, in the starting qualities, but there are many serious drawbacks. The engines are extremely wasteful and inefficient and require costly piping from boiler room to dye house, and the very necessity for providing this piping frequently makes it impossible to locate the extractor at the most

WOUND SECONDARY INDUCTION MOTOR WITH DRUM CONTROLLER, DRIVING HYDRO-EXTRACTOR.

deirable point with reference to other machines. More important, however, is the consideration of speed regulation. With the throttle wide open the speed of operation varies over wide limits depending on the steam pressure, the amount of the load and the way the material is packed in the basket. As the drying effect varies as the square of the speed it is entirely impossible to predetermine the amount of moisture that will be left in the goods. The engines, furthermore, are usually small and cheaply made, and operated by ignorant unmechanical men. It is rare to find an engine that has been operating on one of these machines for any length of time that is not pounding badly and leaking steam with every stroke. Where the engine is mounted above the basket, driving directly to the spindle, there is the added disadvantage of splashing oil and oil-laden water. The engine drive therefore has some advantages in starting but is wasteful of power, inefficient in drying, expensive to pipe, noisy, leaky and dirty, not to mention being dangerously hot.

Another method of operation is by belt from shafting. The basket is started by shifting the belt from a loose to a tight pulley. It is obvious that for the period of acceleration, approximately two minutes, the belt must slip badly either at the main pulley, the counter-shaft pulley, the tight pulley of the extractor or the spindle pulley. It is usually divided between the last two points. At first the operative slides the belt on an inch or so, letting the slip occur at the tight pulley, causing burning and damage to one edge of the driving belt. He then gives his attention to stowing away the goods in the basket to prevent ends and loops from flying out as the speed slowly increases. As soon as this is accomplished he shifts the belt all the way on and the slipping then occurs at the small spindle pulley until the maximum speed is reached. For this reason it is difficult to keep this belt in good condition as it is short and tight, and rapidly deteriorates under such service. This kind of drive, therefore, has the advantage of simplicity and fairly constant operating speed but the disadvantage of slow starting and high up-keep of belts. The machine must be located near the main shafting and here is involved also the further disadvantage of imposing heavy intermittent peak loads which reflect back to all the other machines driven from the same shafting as momentary checks in speed.

The third and best system is the use of a proper electric drive. A great many drives have been used for this purpose with varying degrees of success. Direct-current motors have been used successfully for this purpose for some years, but with alternating-current motors the problem has not proven so simple. On the early installations squirrel-cage motors were used, but two difficulties were encountered which made the drive unsatisfactory. If a standard motor of the proper horse-power to run the machine was used, the period of acceleration was so long and the starting so frequent that the rotor be-

came overheated. If, on the other hand, a motor large enough to avoid excessive heating were installed the starting torque was so great that the belt would slip and the motor come up to speed at once, and the extractor and belt would attain full speed at a rate depending on the friction of the belt on the pulleys.

In the newer forms of drive, these difficulties have been obviated by the use of a small motor of design such that the heat is dissipated outside of the motor. To accomplish this a slip ring motor is used with external secondary resistance and a drum type controller. The motor may be connected to the extractor either by belt or gears. The operation of the apparatus could hardly be more simple. The controller is so arranged that no other apparatus need be touched by the operator. On turning the controller handle to the first notch, the motor starts with all resistance in series. This resistance can be arranged to give a suitable starting torque and is of sufficient capacity that the controller may be left continuously at any notch. The controller is then advanced in the usual manner to full speed position, the entire start being made in one minute for the average extractor.

The operating speed with this form of drive is definite and constant, and the drying is perfectly uniform. The resistance grids are of rugged construction and may be mounted on the wall, a post or under the floor, where they will be entirely out of the way. They can be placed at some distance from the motor if desired without detriment. Where belt drives are used the rule usually followed in selecting the speed is to use a motor having a speed as near as possible that of the basket spindle. In this way the motor pulley has approximately the same diameter as that of the spindle and will pull a load as large as the spindle pulley can receive without slippage.

This type of motor drive has all the advantages of other kinds and none of their disadvantages. The set starts smoothly and quickly, is simple to operate, has no hot parts to inflict burns, does not damage belts, is clean and silent, uniform in drying, can be located where desired, does not affect the speed of other machines, can be run independently at any time and is of reasonable first cost. The increase in capacity and uniform drying alone are sufficient to dictate its use.

RAINPROOFING

BY JAMES STRAND

Rainproofing is a branch of the cloth-finishing trade which has grown in England despite many discouragements. Unsatisfactory work done by some professed proofers and the marking of goods as rainproof when they had been subjected to no adequate proofing process have militated against commercial success. Withal there are more firms equipped for the business and probably more cloths are being treated than at any time previous. Recognizing the demand for coats that shall be porous and yet resist rain even the principal makers of rubberized fabrics have their "Rainproof departments." A valuable property in certain registered fancy names for goods treated to rainproofing processes has grown up and some of these are equally familiar upon both sides of the Atlantic.

More or less mystery surrounds the operations, and patents protect the use of certain types of machine. Various patent specifications published, and some in which the rights are extinct, suffice to show that a treatment with wax is the feature on which ultimate reliance is placed. They provide for use of wax-rods and of melted and dissolved wax and also for a preliminary chemical treatment. As the operation is usually performed, the cloth is run through baths in which sulphate of alumina and acetate of lead are dissolved. The lead is precipitated and a deposit of acetate of alumina remains in the cloth. By suction or equivalent means the fabric is dried or almost dried and it then passes to a heated drum on which drying is completed. A roller, coated with an infinitesimal film of melted wax, delivers its coating upon the fabric at the time at which its last moisture is being driven off as vapor. In theory, at least, the goods receive their waxing at a moment when an

effective vacuum has been created in their fibers and the wax penetrates to the core.

As implicit reliance on the working-out of this theory in practice is impossible the cloth is then run upon a jigger machine through water at something less than boiling-point for a period of as much as an hour. This last touch is effective in fixing the proofing agents and distributing them through the fabric. Goods treated in this manner have stood the test of years and have satisfied many rigorous examiners. Very much depends on the wax and, so far as diligent and persistent inquiry shows, there is no single wax suitable. A blend of waxes has to be made of which paraffin wax is the main body and as a wax of higher melting point the reinforcing agent. The paraffin wax also has necessarily to be that with the highest obtainable melting point and although there are waxes with a nominal point of 132° F., the effective maximum is usually not more than 128° F. Differences of only a few degrees are important, for wax softens before it melts and the more it attaches dust the sooner will it give free passage to water. The maintenance of the high melting-point is essential and it is claimed further that the preliminary chemical treatment is equally necessary to permanent satisfaction.

Were these factors on which stress has been laid of less practical moment, it would seem fairly easy to impregnate fabrics with wax by means of some solvent. But paraffin wax has a high melting point only when the lighter oils that initially form a part of it are expelled. In employing a solvent of a spirituous and volatile character it is usual to find the wax deposited after evaporation of a lower stability than beforehand. Remaining behind after volatilization are some constituents which lead wax to melt prematurely and do injury to its value in rainproofing. Such has been the common experience and this fact stands as a bar to a welcome simplification of the proofing process. None the less there are arrangements being made in England to render goods proof against water by means of treatment with a simple solution. The nature of the fluid employed is the secret and no such progress has been made as justifies a final pronouncement on its efficacy. However, one of the largest firms of dyers and dry-cleaners has taken up the business and is prepared to rainproof your hat, your boots or your garments and there is no question but that the treatment materially increases their resistance to moisture.

A more momentous development is pending. By means of machines and this solution it is proposed to rainproof goods in the piece, either folded or rolled upon boards. No doubt some adaptation of the vacuum principle in dyeing, in which liquor is sucked alternately in and out of the mass, is portended. Experience of the success of this is lacking and it remains to be seen whether the method gives equal resisting properties to every part of the piece. The cost is also to be reckoned, as in employing a volatile solvent some loss of spirit is inevitable and the liquor will necessarily be fouled by any grease latent in the fabric or garment treated. What will dissolve wax will dissolve oil and in dealing with light shades the efficiency of the previous scouring will have something to do with the creation of the ultimate effect.

The objection to handling an inflammable solvent is obvious and the cost of known solvents of greases which are volatile and non-flammable puts them almost out of commercial range. It is not therefore certain that a system that would save labor would be cheap in other respects. Were these possible objections fatal, the utility of the discovery would be limited to a narrow range of fabrics and to the treatment of isolated articles of apparel where a rainproofing of greater or less efficacy might be effected by means of sponging or brushing or such elementary method.

During the five months ended August, 1910, the cotton yarn spun by the mills of India amounted to 272,973,079 pounds, and the amount of goods woven during the same period was 414,515,014 pounds, as compared with 283,300,929 pounds of yarn and 375,599,626 pounds of woven goods in 1909, and 268,408,062 pounds of yarn and 320,797,405 pounds of woven goods in 1908.

Personals

Ora A. Macklin, for the past three and one-half years second hand of woolen spinning at the Bigelow Carpet Co., Lowell, Mass., has resigned to accept a position as overseer of spinning at the Millers River Manufacturing Co., Athol, Mass.

E. P. Oats, overseer of the cloth room at the Beaver Dam Mills, Edgefield, S. C., has resigned.

David F. Stewart, Boss Dyer for Faulkner & Colony Mfg. Co., Keene, N. H., has severed his connections with that company.

J. F. Bressett, Boss Dyer for the Nasonville Woolen Co., Nasonville, R. I., has severed his connections with that company.

Wendall J. Battye, designer for the S. Slater & Sons Mill, Worsted Dept., Webster, Mass., has severed his connections with that company.

Alec Linton, Boss Dyer for the Beaver Brook Mills American Woolen Co., Collinsville, Mass., has resigned.

William Melbourne has accepted a position as overseer of spinning for Joseph Simpson & Son, Toronto, Ont., Canada, He comes from Cohoes, N. Y.

Walter H. Angell has accepted a position as overseer of dyeing for the Nasonville Woolen Co., Nasonville R. I., formerly at the Aetna Hosiery Co., Worcester, Mass.

Benjamin Wilcox, treasurer of the City Mfg. Co., New Bedford, Mass., has tendered his resignation to the company. Frank Wilcox has been elected treasurer pro tem by the directors.

S. P. Mowry, superintendent New Bedford and Agawan Finishing Co., East Wareham, Mass., has severed his connection with that company. His successor is A. E. Smith, Chester, Pa.

John J. Nolan, overseer of weaving at the Beaver Mills, operated by the Hoosac Cotton Co., North Adams, Mass., has resigned to accept a similar position at Fitchburg, Mass.

John S. Murphy, master mechanic for the Osgood Mills, North Andover, Mass., has severed his connections with that company.

Thomas Kemp has accepted a position as overseer of spinning for Horn Bros., Woolen Co., Lindsay, Ont., Canada. He comes from Petersborough, Canada.

Harry Slack, overseer of the twisting department at the Paragon Silk Co., Paterson, N. J., has resigned.

Peter Bauer has accepted a position as superintendent of the Paragon Silk Co., Paterson, N. J.

George C. Cook, overseer of weaving at the Paragon Silk Co., Paterson, N. J., has resigned after ten years of service.

Harry B. Harley has been appointed president of the Barnaby Mfg. Co., Fall River, Mass., to succeed Jerome C. Borden. This action was taken at a meeting of the stockholders held recently.

D. J. Sheehan has accepted a position as overseer of carding for the Webster Woolen Co., Sabattus, Me. He comes from Pittsfield, Mass.

Herbert Fitzroy, overseer of finishing for the French River Textile Co., Mechanicsville, Conn., has severed his connections with that company.

P. A. Thompson has accepted a position as overseer of dressing for the Hinsdale Woolen Co., Hinsdale, Mass. He was formerly at the Victor Mfg. Co., Clinton, Mass.

Benj. Horsfall has accepted a position as boss dyer for the Beaver Brook Mills, Collinsville, Mass. He comes from the Middlesex Co., Lowell, Mass.

William H. Wilcox has accepted a position as overseer of carding at the Hewson Mills, Amherst, N. S., succeeding J. J. Grady. Mr. Wilcox comes from the Oakland Mfg. Co., Reisertown, Md.

William Sykes has been appointed boss dyer for the Faulkner & Colony Mfg. Co., Keene, N. H.

Thomas Armstrong has been appointed assistant spuerintendent of the Griswoldville Mfg. Co., Griswoldville, Mass. He comes from the Harmony Mills, Cohoes, N. Y.

Hugo Dolge, Superintendent Franklin Felt Co., Franklin, Mass., has resigned and acceped a similar position with the Felters Co., Millbury, Mass.

C. S. Pennington has accepted a position as travelling salesman for Scott & Williams Knitting Machine Manufacturers. His office will be in the Knickerbocker Bldg., Sixth and Arch Sts., Philadelphia, Pa.

Joseph Pepper has accepted a position as finisher in the Roy Woolen Co., Watervliet, N. Y.

William Sykes has bgeen appointed Boss Dyer for the Faulkner and Colony Mfg. Co., of Keene, N. H.

Thomas Armstrong has been appointed assistant superintendent of the Griswoldville Mfg. Co., Griswoldville, Mass.

J. T. Arnett has accepted a position as overseer of spinning and assistant superintendent for the Maple Mills at Dillon, S. C.

J. F. Kersey has accepted a position as superintendent of the Coosa River Spinning Co., Bon Air, Alabama, succeding R. S. Crawford.

W. A. Black has accepted a position as superintendent of the Pomona Mills, Greensboro, N. C.

T. P. Moose has accepted a position as overseer of spinning for the Cannon Mills, Kannapolis, N. C.

W. P. Moneyham has accepted a position as overseer of carding and spinning for the Jennings Mill, Lumberton, N. C.

F. L. Drake has accepted a position as overseer of carding in the Longhurst Mill, Roxboro, N. C.

J. J. Crosby has accepted a position as overseer of weaving, slashing and designing for the Pomona Mills, Greensboro, N. C.

O. M. Page has been appointed overseer of weaving for the Easley Cotton Mills, Easley, S. C.

A. D. Adkins, overseer of weaving at the Easley Cotton Mills, has accepted a position as superintendent of the Franklin Mill, Greensboro, S. C.

Freeman Sands has accepted a position as overseer of dyeing for Amos Abbott & Co., Dexter, Me.

Wesley Sanderson has been appointed overseer of carding for the Oakland Mfg. Co., Reisterstown, Md., succeeding W. H. Wilcox.

James Hanley, overseer of spinning for the Hewson Woolen Mills, Amherst, Nova Scotia, Canada, has resigned.

J. F. Rigney, overseer of finishing for the Lymansville Co., Lymansville, R. I., has severed his connections with that company.

Eugene Kiley has been appointed overseer of weaving for the Cleveland Woolen Mills, Cleveland, Tenn. He comes from Huntington, Mass.

P. S. Shortle, overseer of finishing for the Cleveland Woolen Mills, Cleveland, Tenn., has severed his connections with that company.

Edward A. Donahue has accepted a position as overseer of spinning for the Hewson Woolen Mills, Ltd., Amherst, N. S., Canada, succeeding James Henley.

John Wenman, overseer of carding for the Hewson Woolen Mills, Ltd., Amherst, N. S., Canada, has resigned.

Harry E. Stevens, master mechanic for the Ayer Mills, Lawrence, Mass., has resigned.

Herbert Gerdon has accepted a position as manager of the glove department of the Bailey Knitting Co., Fort Plain, N. Y., succeeding J. S. Zimmer.

A. Saunders has accepted a position as overseer of dyeing for the Industrial Dyeing and Finishing Works, Frankford Ave., Philadelphia, Pa. He comes from Easton, Pa.

James E. Coburn, agent of the Stark Mill, Manchester, N. H., for the past four years, has resigned to accept a position as agent of the Androscoggin Mills, Lewiston, Me.

M. C. Johnson has accepted the position as overseer of spinning at the Scottdale Mills, Scottdale, Ga.

Matthew O'Connell has accepted the position as chief engineer for John Ramsay & Sons, Phillipsburg, N. J.

Jos. H. Hindle, for some years superintendent of the Magog Print Works, of the Dominion Textile Co., Montreal, Canada, has resigned. His successor has not yet been announced.

John S. Robinson has accepted the position as overseer of carding at the Adams Mfg. Co., Adams, Mass. He comes from Yantic, Conn.

Howard Simpkins, overseer of dyeing at the Crystal Spring Bleachery, Fall River, Mass., has resigned to accept a similar position with the Manville Co., Manville, R. I.

T. Frank Sweeney has accepted the position as overseer of finishing at the Saxton's River Woolen Co., Saxton's River, Vt. He comes from Pittsfield, Mass.

Rudolph A. Pickard has accepted the position as overseer of weaving at the Burlington Mills, American Woolen Co., Winooski, Vt., succeeding Daniel Fox, who resigned.

J. E. Moren, overseer of spinning at the Falls Co., Norwich, Conn., has severed his connection with that company.

Albert Sykes, foreman of the sewing department at the Rhode Island Worsted Co., Stafford Springs, Conn., has resigned and is succeeded by Martin Burke.

Henry Orton, assistant designer for the Atlantic Mills, Providence, R. I., for the past twenty years, has severed his connection with that company.

O. Vincent has been appointed overseer of weaving at the Glenola Cotton Mills, Eufaula, Ala. He comes from East Tallassee, Ala.

W. H. Lowd has accepted a position as overseer of carding at the Great Falls Woolen Co., Somersworth, N. H. He comes from East Rochester and succeeds Charles Cobbett.

William M. Lacey, superintendent of the Auburn Woolen Co., Peterboro, Ont., Canada, has severed his connection with that company.

Wendell J. Battye has been appointed superintendent of the Lymansville Co., Lymansville, R. I. He was formerly employed for S. Slater & Sons Mill at Webster, Mass.

Arthur Towle, assistant superintendent and designer at the Kennebec Mill, American Woolen Co., Fairfield, Me., has severed his connection with that company. He has accepted the position as designer at the Holden, Leonard Co., Bennington, Vt.

Frank McCool has accepted the position as chemist at the Dana Warp Mfg. Co., Westbrook, Me.

James McKinnon has accepted the position as overseer of dyeing at the Berkshire Mills, Frankford, Philadelphia, Pa.

John Killars, Jr., has reentered the employ of the Hoosac Cotton Mills, No. Adams, Mass., as designer.

W. M. Thornburg has accepted the position as overseer of carding and spinning at the Lakeside

Mills, Burlington, N. C. He comes from Randleman, N. C.

L. A. Thompson, superintendent of the Lakeside Mills, Burlington, N. C., has resigned.

J. W. Burnett, superintendent of the Gaffney Mfg. Co., Gaffney, S. C., has severed his connection with that company. He has gone North, where he will remain for a while, returning to accept the superintendency of the Chesnee Mills, Chesnee, S. C.

C. L. Ashley, overseer of spinning at the Scottdale Mills, Scottdale, Ga., has resigned to accept a position as overseer of spinning, spooling and warping at the Exposition Mill, No. 2, at Atlanta, Ga.

Ben Nuttall has accepted a position as superintendent of the cotton department of the Atlanta Woolen Mills, East Point, Ga. He was formerly employed at the Lawrenceville Mfg. Co., Lawrenceville, Ga.

W. R. Tattersall, formerly superintendent of the Franklin Mills, Greers, S. C., has been appointed superintendent of the Gaffney Mfg. Co., Gaffney, S. C.

D. T. Bagwell, superintendent of the Valley Falls Mill, Lolo, S. C., has resigned to become superintendent of the Capital City Mills, Columbia, S. C.

W. R. Southern, overseer of carding and spinning at the Glenola Mills, Eufaula, Ala., has resigned.

A. H. Cottingham has been appointed superintendent of the Apalache Mill, Arlington, S. C. He was formerly superintendent of the Ottaray Mills, Union, S. C.

D. B. Brannon has been appointed superintendent of the Ottaray Mill, Union, S. C.

Thomas Walker has accepted the position as overseer of weaving at the Cascade Woolen Mill, Oakland, Me. He is to succeed H. O. Farrar.

Robert Kolb, overseer of finishing at the Oakland Mills, Oakland, R. I., has severed his connection with that company.

Thomas Moriarty of the Carder's Union, New Bedford, Mass., has been elected treasurer of the Textile Council to succeed the late Matthew J. Hart.

Henry W. Brown, agent of the Sugar River Mills, Dexter Richards & Sons Co., Newport, N. H., has tendered his resignation. It is reported that V. J. Brennan, general manager of the Brampton Woolen Co., Newport, is to assume the management of both mills.

C. H. Philbrick, formerly carder for Thomas Oakes & Co., Bloomfield, N. J., for fifteen years, and later with the Madison Woolen Co., Madison, Me., has become traveling salesman for B. S. Roy & Son, Card Grinding Machinery Co., of Worcester, Mass.

Frank Eastwood, late superintendent of the Hockanum Association Mill, Rockville, Conn., has been appointed superintendent of the cloth manufacturing department at the Wood Worsted Mill, Lawrence, Mass.

John Ryan has been appointed overseer of carding at the Clinton Mill, Woonsocket, R. I. He comes from Valley Falls, R. I.

F. Kay, overseer of dyeing at the Dominion Textile Company, Montmorency Falls, P. Q., Canada, has resigned.

Alexander Kirkland has accepted the position as boss dyer at the Dominion Textile Co., Montmorency Falls, P. Q., Canada. He comes from Lowell, Mass.

Geo. H. Pariseau has accepted the position as overseer of spinning at the Warren Woolen Co., Stafford Springs, Conn.

Lewis Dexter has been appointed agent of the Stark Mills, Manchester, N. H., to succeed James E. Coburn. Mr. Dexter was formerly agent of the Warner Cotton Mills, Newburyport, Mass.

Samuel McIntire has accepted the position as overseer of carding at the Auburn Woolen Co., Peterboro, Ont., Canada, succeeding C. H. Philbrick. He comes from Collinsville, Mass.

W. H. Clark, formerly of the Cheshire Blanket Co., Marlboro, N. H., will succeed Thomas S. McDermott as superintendent of the Ray Fabric Mills, Franklin, Mass. Mr. McDermott has resigned to become one of the firm of the Clark-Cutler, McDermott Blanket Co., which will soon erect a plant in Franklin.

Sam Emsley, formerly overseer at the Paton Mfg. Co., Sherbrooke, P. Q., Canada, has accepted a position as overseer of spinning and twisting at the Hartford Carpet Co., Thompsonville, Conn.

Harry E. Stevens, master mechanic at the Ayer Mill, Lawrence, Mass., has resigned.

Elias S. Willis has accepted the position as overseer of carding at the Davis Mill, Fall River, Mass. He comes from New Bedford.

Con Murphy, for 25 years overseer of gigging at the Assabet Mills, Maynard, Mass., has resigned to accept a position with James & E. H. Wilson, Pittsfield, Mass.

John E. Kelly, for the past ten years employed as an overseer for the Roy Woolen Co., Watervliet, N. Y., has resigned to accept a position as superintendent of the finishing at the Rock Mfg. Co., Rockville, Conn. He was presented with a traveling bag and a purse of money by the employes of the mills.

John C. Henley, overseer of the spinning department at the Warren Mfg. Co., Providence, R. I., has resigned.

R. P. Deal has been appointed general manager of the Deep River Mills, Randleman, N. C. He was formerly superintendent of the Pomona Mills of Greensboro, N. C.

J. W. White has accepted the position as overseer of weaving at the Lafayette Cotton Mill, Lafayette, Ga. He comes from Jacksonville, Ala.

D. B. Chandler, overseer of the cloth room at the Newberry Mills, Newberry, S. C., has resigned to accept a similar position with the Brandon Mills, Greenville, S. C.

J. C. Cudd has been promoted from second hand to overseer of weaving at the Otteray Mills, Union, S. C.

O. A. Reeves, superintendent of the Apalache Mills, Arlington, S. C., has resigned.

J. L. Riddle, formerly assistant overseer of spinning at the Victor Mill, Greers, S. C., has accepted a position as overseer of spinning at the Otteray Mill, Union, S. C.

E. L. Haynes has accepted the position as overseer of weaving at the Arista Mills, Winston-Salem, N. C.

R. S. Wheeler, superintendent of the Kerr Bleachery, Concord, N. C., has resigned to accept the position of manager of the Union Bleachery, Greenville, S. C.

J. L. Davis, superintendent to the Ninety-Six, S. C. Cotton Mill, has resigned to accept a similar position with the Grendel Mill, No. 1, Greenwood, S. C.

W. W. Shaw, superintendent of the Grendel Mill, No. 1, Greenwood, S. C., has resigned.

B. B. Davis, overseer of carding at the Klotho Mills, King's Mountain, N. C., has resigned.

Sam Upton has accepted the position as overseer of spinning at the Naomi Mills, Randleman, N. C.

J. V. Johnson has been appointed master mechanic at the Brogan Mills, Anderson, S. C.

D. C. Vanhoy, master mechanic at the Jennings Mill, Lumberton, N. C., has resigned to accept a similar position at Thomasville, N. C.

E. L. Hedge, superintendent of the Avalon Mills, Mayodan, N. C., has resigned to accept a similar position with the Edna Mills, Reidsville, N. C.

DEATHS.

G. Otto Kunhardt, superintendent of the George E. Kunhardt Woolen and Worsted Mfd. Goods, Lawence, Mass., died at his home at that city, at the age of 52 years. He leaves a widow.

David Jarvis, manufacturer of knit goods, 235 Wister St., Germantown, Pa., died at his home in that city July 31, interment being held at the Northwood Cemetery on Aug. 4. Mr. Jarvis was born in Nottingham, England, on Oct. 29, 1835. He came to this country when a young man, settling in Pittsburgh. He later came to Germantown and started an establishment for the manufacture of knit goods in the rear of his home, in which business he was engaged at the time of his death. Mr. Jarvis had been prominent in Democratic politics for many years, although he has served in no public office, with the exception of one term as school director. He is survived by eight children, five daughters and three sons.

Orlando Saunders, 26 years oennected with the Middlesex Mills, Lowell, Mass., died at his home in that city at the age of 65 years. He was born in Woonsocket, R. I., June 13, 1845. He began work at the Middlesex Mills 26 years ago, first as superintendent and afterwards he was made agent. He resigned his position at the Middlesex Mills in 1907 to accept the position as agent of the Assabet Mills, Maynard, Mass. Mr. Saunders was a member of the Highland Club, the Vesper County Club, and various fraternal organizations. He is survived by a wife.

Matthew J. Hart, secretary of the New Bedford, Mass., Cotton Weavers' Protecive Associaion, and president of the National Federation of Weavers, died at St. Luke's Hospital in that city, following a brief illness.

George Hinchcliffe, a former agent of the Assabet Mills, American Woolen Co., Maynard, Mass., died at a private hospital in Boson, Mass., following an operation. He was born in Huddersfield, Yorkshire, England, February 27th, 1849. At an early age he was an apprentice with his father, Joshua Hinchcliffe, in the woolen manufacturing in England. He came to the United States 12 years ago and was soon appointed agent of the Assabet Mills. He afterwards was appointed agent of the Middlesex Mills, Lowell, Mass., a position which he held for a short time. He was a membger of the Past Masters of Prince Edwards Lodge of Masons, Huddersfield, England. He is survived by a widow and eight children.

Arthur Amory, head of the firm of Amory Browne & Co., Boston and New York, died at his home in Boston, Mass., on Wednesday, Aug. 8, 1911. He was apparently in good health up to a few days before his death. He was born on April 6, 1841. The firm of Amory Browne & Co. was organized about the year 1895.

Fred H. Pearce, at one time superintendent of the Beoli Mill, West Fitchburg, Mass., died at his summer home at Westminster at the age of 38 years. Death was due to peritonitis. Mr. Pearce was a native of Fitchburg and prominent in musical circles. He is survived by a wife and two sisters.

James A. Holt, a retired textile man, died at his home in Chester, Pa., recently at the age of 83 years. He was at one time the junior member of the firm of Byram & Holt, who operated a woolen mill in Chester.

John W. Bentley, superintendent of the Standish Woolen Mills, Plymouth, Mass., died suddenly at an Atlantic City Hotel August 23rd from heart disease. He had been in the best of health and had been there for a week with his two sisters. Mr. Bentley was 65 years of age and is survived by a widow and one daughter.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

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New Mills.

*Alabama, Siluria. The addition being built to the Buck Creek Cotton Mills, formerly known as the Siluria Cotton Mill Co., will increase the equipment to 20,000 spindles. The plain looms have been replaced with 400 40-inch automatic looms, to be operated on drills and sheetings. It is the company's intention to increase the number of looms eventually to 600. Two steam electric engines of 900 h. p. will be installed. About 200 people will be employed.

*Connecticut, Plainfield. The brick work on the new mill of the Plainfield Mills Corporation is up half way of the first floor, and orders for machinery in certain departments are being placed.

*Georgia, La Grange. Work on the new Dunson Cotton Mills is progressing rapidly and it is likely that the mills will be ready for operation by Jan. 1 as predicted, although it is said that the company does not expect to begin active work before the latter part of February or March. Contract for the company's warehouse has been let.

*New York, Glenham. The Glenham Embroidery Co. is reported to increase the capital stock from $1,000,000 to $2,500,000. This company, in which David Schoenfeld and Ferdinand L. Schloss are mentioned as interested, has been formed to operate the plant of the Groveville Carpet Mills, taken over by the Loeb Schoenfeld Co., as previously reported. Curtains and embroideries are the product.

South Carolina, Columbia. The Katrine Mfg. Co. has been incorporated with a capital of $50,000, to manufacture cotton cloth. The incorporators are B. E. Geers, president and treasurer; John M. Geers, vice-president, and Wm. Goldsmith, secretary.

Texas, El Paso. It is reported that the American Exploration & Holding Co. plans the organization of a stock company to erect a cotton spinning and weaving mill, bleachery, printing plant and possibly a silk mill.

*Texas, San Antonio. W. K. Durham, of Atlanta, Ga., is president, C. S. Durham, treasurer, and M. W. Durham, agent, superintendent and buyer, of the Olympia Cotton Mills, the company reported in last issue as to establish a plant here for the manufacture of cotton duck. Building operations will hardly be started before Jan. 1. 1912, and the size and situation of the plant will not be definitely decided upon until the engineer's report is made, probably in about thirty days. Ducking and twine will be the product, and steam power will be employed.

*Vermont, Brattleboro. The brickwork of the new Fort Dummer Mills is completed, and the building will probably be under roof by the last of next week. It is believed that the machinery will be installed and running in time for the company to begin the production of its output of fine lawns by November, as previously reported.

*Virginia, Alta Vista. It is expected that the buildings of the Alta Vista Cotton Mills, will be completed within the next thirty days. The total cost will be approximately $80,000 for the buildings and $200,000 for machinery, which will include 12,800 spindles and 350 fancy looms.

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Enlargements and Improvements.

*Georgia, Columbus. Plans have not yet fully materialized for the proposed additional equipment reported to be installed in the Columbus Mfg. Co.'s plant.

*Massachusetts, Millbury. The new work at the West End Thread Co. will not mean any increase in the working force. It consists of the building of four tenement houses and an addition to the present office and a new shipping room. The present spinning room will be raised one story, to the level of the rest of the mill.

*Massachusetts, North Adams. The reconstruction and additions to the Eclipse Mills of the Hoosac Cotton Mills were authorized by the stockholders at their meeting on the 11th, when they unanimously voted to follow the recommendation of the directors by increasing the capital stock of the company by $500,000. The original plans have been changed somewhat, owing to difficulty in securing the land desired, and instead of one building, two will be built, one an addition to the weave shed and another an addition to the Eclipse mill proper, also a new power plant. It is said that work will begin as soon as contracts can be let, and it is hoped to have everything in readiness to begin manufacturing in the new part by March 1st, 1912.

Massachusetts, Westboro. Owing to increased business, it is said that the Westboro Weaving Co. are to occupy the first floor of their factory building, formerly used by a leather concern, thus giving them the whole plant. This company has been operating 36 looms on narrow fabrics, and two new looms are now being installed for wider goods.

*Missouri, Kansas City. The Kansas City Cotton Mills Co., previously reported as likely to resume operations about July 1, will probably be in operation by Sept. 15. Repair work and alterations in connection with the reorganization have taken longer than expected.

New Hampshire, Dover. Work on the construc-

tion of a concrete dam is soon to be commenced for the Cocheco department of the Pacific Mills, about 3 miles up the Cocheco River, from the company's plant.

New York, Lockport. The Niagara Textile Co. has purchased land at South Transit St. and State Road, and will build an addition 180 feet long, work on which will be started this fall. The company now operates 200 narrow looms on huck towels and crashes.

*North Carolina, Albemarle. It is said that the Wiscassett Mills Co. will soon replace the second story of the No. 1 Mill, which is of wooden construction, with brick work. Work is underway on rebuilding the picker room.

Pennsylvania, Philadelphia. The Berkshire Mfg. Co., makers of cotton and woolen dress goods, are running on a short time schedule of 38 hours a week. It is said that the mill will be closed for a week in order that repairs to the engine may be made.

*Pennsylvania, Reading. The Reading Towel Manufacturing Co. has been incorporated with capital stock of $15,000. The plant is run on Turkish towels. It is stated that additional looms are to be installed.

Rhode Island, Warren. It is reported that the Parker Mills are soon to be enlarged.

*South Carolina, Graniteville. It is said that the improvements at the Graniteville Mfg. Co. will include the installation of a generator in the Hickman Mill No. 3, to use steam turbines, which will increase the power of the Graniteville Mill No. 1 through the use of an electric drive. The 10,700 mule spindles will be replaced with 15,000 ring spindles. Twelve or fifteen new cards and the other necessary machinery will also be added.

South Carolina, Clover. The Clover Cotton Mfg. Co. has completed the installation of four additional spinning frames. The company is operating 20,000 ring spindles and 8000 twisting spindles on carded and combed cotton varns.

*South Carolina, Greenville. The Westervelt Mills, work on whose new plant is going on steadily, have let the contract for the building of 100 four, five and six room cottages for operatives.

*South Carolina, Greers. The Greers Mfg. Co., who are building a four-story addition to their plant, have also awarded contract for the erection of an addition, 50 by 100 feet, to the warehouse Lockwood, Greene & Co., of Boston and Greenville, S. C., are architects and engineers of this new work.

South Carolina, Whitmire. The Glenn-Lowry Mfg. Co. has been authorized by the Secretary of State to increase its capital stock from $750,000 to $1,250,000. This increased capitalization, it is believed, is to cover an addition to the company's equipment of 36,000 spindles. Print cloths are manufactured on 775 broad and 125 narrow looms.

*Vermont, Burlington. The Queen City Cotton Co. has begun the erection of a one-story addition to the cloth room, 25 by 154 feet, located west of the weave shed. Saw teeth on the weave shed are being extended to the side walls and a new saw tooth added. They are also adding fifty-six 40-inch Northrop looms.

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Mills Shutting Down.

Pennsylvania, Philadelphia. John Gallashan, operating 62 looms on men's wear and dress goods, located in the Godshalk Mills, 23rd and Hamilton Sts., has sold out his plant at public auction and will retire from business.

WOOLEN.

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New Mills.

Maine, Bridgton. The Lincoln Woolen Co. has been incorporated with a capital of $10,000, to manufacture cloth and other goods wholly or in part of wool. Luther F. McKinney is president and Chas. I. Lincoln, treasurer. It is reported that this company is to take over the Mt. Batty Mill recently occupied by the S. G. Hall Mfg. Co.

Pennsylvania, Philadelphia. A new company operating under the name of the Alpha Spinning Co., have leased a portion of the Leicester & Continental Mills at Lena and Armat Sts., Germantown, where they will install equipment for the spinning of woolen and worsted yarns of all kinds. As to the number of spindles to be operated by the new concern, or who the owners are, it is impossible to say at this time, but they make the statement that the machinery is on the way and will be installed within two weeks.

*Washington, Ellensburg. It is reported that over 70 per cent. of the stock has been subscribed for the new woolen mill recently reported as to be located here. O. W. Sinclair, chairman of the Chamber of Commerce, has the matter in hand, and it is believed that the balance is also provided for. The movement has progressed so far that it is said actual construction work will be commenced within two or three months. The new mill is planned to employ about 100 hands, and will receive its supply of raw material practically at its own door.

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Enlargements and Improvements.

*Connecticut, Stafford Springs. A new dam is under construction at New Boston, for the Fabyan Woolen Co. Cost is estimated to be about $10,000.

Maine, Camden. The recent increase in the capital stock of the Knox Woolen Company, from $200,000 to $400,000, does not mean an enlargement of the plant at the present time, but simply that their investment largely exceeded capitalization, hence the additional capital.

*Maine, Houlton. The new addition, 60 by 116 feet, to the Houlton Woolen Mill, has been completed and the company will occupy the building at once.

Pennsylvania, Philadelphia. Five sets of cards are being operated in the Leicester-Continental Mills at Hancock St. and Montgomery Ave., where they are running 7 sets, 8112 mule spindles on woolen and merino yarns for the weaving and knitting trade and selling direct.

Pennsylvania, Philadelphia. A. J. Gordan & Co., Mascher and Somerset Sts., manufacturers of dress goods, men's wear, Oriental pillow slips and couch covers on 34 looms, have leased the entire second floor of the building in which they are located and will install additional looms and 2 new winding frames. They sell direct.

Pennsylvania, Philadelphia. Walker & Stine, operating the Selwood Mill at Leiper and Adams Sts., Frankford, have recently purchased the equipment of 24 looms of the York Cotton Co., which recently went out of existence. They are installing the additional machinery in a new addition recently made to their mill. This concern manufactures men's wear, dress goods and pillow covers.

*Virginia, Laurel Mills. Fred S. Hinds of Boston has been engaged to prepare plans and specifications for the rebuilding of the mills of the Rappahannock Woolen Mills Co. which were burned.

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Mills Starting Up.

Maine, Wilton. The Wilton Woolen Co., whose mills have been shut down, have started 42 looms, about a quarter of their equipment, and it is hoped that business will soon warrant the starting of the entire plant. This company manufactures cashmerettes, goods used largely by rubber mills, and the depression in the latter business is given as the reason for the curtailment of the production of the woolen mills.

Massachusetts, Hinsdale. As fast as warps are made and weavers secured, the Hinsdale Woolen Mills are starting up to full capacity, on a contract for the government, as well as the regular product of the mill. For some time past only 22 of the 60 looms have been operated.

Pennsylvania, Norristown. After operating for five days a week for several months, the mills of the Norristown Woolen Co. are now running on full time.

Wisconsin, Waupaca. The Waupaca Felting Mills have resumed operations, and it is reported will put on a night force as soon as the help be obtained. The factory has been closed, owing to a falling off in the demand for its product, but the management reports having orders now in excess of the output. The present day force numbers 35, and the output is 100 dozen felt hats daily.

KNIT.

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New Mills.

*Canada, Ontario, Woodstock. Regarding new construction work for the Ken Knit Company, Ltd., not Kerr as given last week, it is expected that production will begin in October. This is a $100,000 corporation and will operate by electricity in sweater coats, knitted caps and knit ties. Geo. F. Mahon is president, W. Barrowclough, treasurer, and K. Harvey, superintendent.

Maine, Brunswick. It is reported that Mr. Turner C. Hunton, former proprietor of the Brunswick Knitting Mills, destroyed by fire last November, will reorganize and build a mill on the old site. Work on the building will begin in a short time. Only knitting will be done, the product being sent away to be dyed and finished.

*Massachusetts, Brookline. The new knitting plant, previously reported established at 65 Kent St., is known as the Jersey Cloth Mills. Jersey Cloth, rubber linings and similar goods are manufactured and sold direct.

Pennsylvania, Manchester. The Manchester Hosiery Mills have been incorporated with a capital stock of $10,000, to manufacture ladies' hosiery. The officers are Dr. J. C. May, president; R. J. Hilliker, treasurer. C. H. Merkley is superintendent. Gallagher, Merryman & Co., selling agents. This is an incorporation of the old company, and the output will be increased. In last week's issue, under York, this was erroneously reported as the Manhattan Hosiery Co.

Pennsylvania, Philadelphia. The Campbell Hosiery Manfg. Co., recently incorporated and reported by us as enlarging their plant, have removed from Jasper and York Sts., to the Roxboro Mills, 2011 E. Arizona St., where larger quarters have been secured and where further enlargements will be made as conditions demand. They are manufacturing fine seamless hosiery, selling through New York.

Pennsylvania, Philadelphia. The Red Star Knitting Co. has leased the fifth floor of the building at 125 N. 3rd St. and are manufacturing sweater coats for men and women and woolen and worsted knitted novelties. The plant contains 6 knitting and 7 sewing machines by electric power. They are using 2/20 and 4/15 worsted and 3/20 wool yarns. The owners of the plant are Cohen, Saligman and Levin. Two new knitters are to be ordered at once to enable them to keep up with their orders. They sell direct to the jobbing trade.

Pennsylvania, Philadelphia. Louis Richter has installed 5 knitters and 5 sewing machines at 617 South 4th St. for manufacturing sweater coats for women and children. Product is sold direct to the jobbing trade. He is using 2/18 and 2/20 wool and worsted yarns and 1/14 and 1/10 cotton.

Pennnsylvania, Philadelphia. An application for a charter will soon be made for the Reliance Hosiery Co., with a capital of $25,000 and Ernest J. Aucott, William M. Longstreth and James T. Hunter, as incorporators. This new company will take over and operate the business formerly conducted by E. J. Aucott at 4947 Wakefield St., Germantown, where he manufactured men's and women's seamless cotton hosiery on 120 knitters, 10 ribbers, 3 welters, 4 loopers and 5 sewing machines, selling his production direct. The officers of the company will be Ernest J. Aucott, president

and treasurer, and Jas. T. Hunter, secretary. The mill occupied by them which was almost destroyed by fire several months ago has been rebuilt and the machinery replaced and is now in operation

Pennsylvania, Philadelphia. The Belmont Knitting Mills have been started up at 13th and Columbia Ave., by Fetters & Partrige, who have installed a number of new knitters on which they are making high grade knitted neckties of silk. They sell direct. The plant is operated by electricity.

Pennsylvania, Reading. Notice has been given that an application will be made on Aug. 21 for a charter for the Premier Underwear Co. to engage in the manufacture of knit goods. According to the report, the company intends leasing quarters at present, and will eventually erect a plant of its own. The incorporators are John L. Coxe, Harry A. Coxe and G. H. Coxe.

Pennsylvania, Thomasville. According to report, H. J. Rahe, G. W. Lauer, E. H. Neiman and L. M. Lauer, of Thomasville and vicinity, are interested in the organization of a company to operate a knitting mill here. A large brick building belonging to Mr. Neiman will be used in which to install the plant.

Utah, Ogden. The John Scowcroft & Sons Co., manufacturers of overalls, have installed 25 new automatic knitting machines in their factory and will open a knitting department under the supervision of H. F. Hoffman, of Lacrosse, Wis. It is said that this equipment is to be increased and that the company will manufacture a large part of the knit goods, largely sweaters, which they have been handling.

*Virginia, Suffolk. The Carr Knitting Mills, recently incorporated with a capital of $50,000, to manufacture seamless hosiery, are ready for operation. A building 40 by 100 feet has been erected and 20 knitting machines installed. J. O. Carr is manager.

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Enlargements and Improvements.

Alabama, Anniston. The United Hosiery Mills are reported to install equipment for manufacturing silk hosiery. This company, capitalized at $100,000, has present equipment of 65 knitting machines run on hosiery.

*Alabama, Fort Payne. The Florence Hosiery Mills, a branch of the Davis Hosiery Mills of Chattanooga, will add 15 new knitting machines, making 85 in operation.

*Indiana, Logansport. J. H. Foley is president and W. J. Uhl, treasurer, superintendent and buyer of the recently incorporated Majestic Knitting Co., capital $50,000, which is to take over the business of the Logansport Underwear Co. An addition to the plant will be built and men's union underwear manufactured.

Massachusetts, Methuen. The Lawrence Knitting Co. is to build a one-story annex in the rear of its factory on Exchange Place, to give additional room.

Michigan, Grand Rapids. It is reported that the Grand Rapids Hosiery Co., controlled by the same interests as the Globe Knitting Works and operating in a part of that plant, is to purchase and install 13 new hosiery machines.

*Minnesota, Minneapolis. The Northwestern Knitting Co. has completed extensive alterations and improvements in their plant, including the five-story addition, to be used in the manufacture of ribbed underwear. The company's plant now has a total floor space of some 370,000 square feet.

New York, Cohoes. It is reported that the Hope Knitting Co. is planning the installation of an auxiliary electric power plant, for use in case of a lack of water.

*New York, Elmira. The Ironwear Hosiery Co is installing about $7,500 worth of new machinery in the Main Street mill, to be used for manufacturing men's silk hose, in addition to their regular lines. The plant is being operated to its full capacity.

*New York, Hudson. Work is progressing rapidly on the construction of the addition to the plant of the Swansdown Knitting Co., and it is believed that the mill, which has been closed during the progress of this new work, will resume operations by Sept. 1.

*New York, Utica. The new mill of the Capron Knitting Co. will be ready for occupancy in about three weeks, the transfer of the machinery having started. The company manufactures ribbed and mesh underwear, union suits and sweater coats, and will increase their output in the new plant.

*New York, Watertown. Certificate has been filed by the Shaughnessy Knitting Co., whose new mill has recently been completed, announcing an increase in the capital stock of the company from $40,000 to $75,000.

*North Carolina, Durham. The Chatham Knitting Mills Co., whose plant was burned, have erected a one-story frame building, with metal roof, 33 by 125 feet, and have installed a 15 h. p. gasolene engine capable of driving 100 knitting machines. Necessary repairs and new installations of machinery are being made. It is said that the company will experiment with several makes of knitting machines before further orders are placed

*North Carolina, Haw River. The new building for the Regina Hosiery Mfg. Co. was made necessary on account of the expiration of the lease held by the company on its present quarters. The equipment will be moved into the new building when completed, and some finishing machinery added.

Pennsylvania. Philadelphia. William F. Taubel, manufacturer of seamless hosiery, has leased more space in the mill at Coral & Adams Sts., and is adding additional machines.

Pennsylvania, Philadelphia. The New Process Gas Mantle Co., with factories at 31 Bank St. and 221 Chestnut St., have leased the two buildings at 27 and 29 Bank St., and removed their equipment to the new address. They are quite busy,

having recently put out a new inverted self-lighting mantle for which they are receiving many orders.

Pennsylvania, Philadelphia. Thomas E. Brown, of the firm of Thomas E. Brown & Sons, manufacturers of men's, women's and misses' full fashioned and seamless hosiery in cotton, mercerized, lisle and silk, operating 200 spring and 400 latch needle knitting machines, 20 sewing machines and 50 loopers, through a prominent builder in this city, is asking for bids for a five story addition to his present mill at 2nd and Westmoreland Sts. The plans call for a structure measuring 38 by 64 feet..

Pennsylvania, Philadelphia. The Regal Silk Hosiery Co., manufacturers of high grade silk hosiery with 36 knitters, 6 loopers and 5 ribbers, are arranging for the installation of additional machines on which to make new grade of goods. They are very busy selling direct.

Pennsylvania, Reading. The Gehrke Knitting Mills are erecting a new two-story brick building, 30 by 100 ft., on 11th St., above Marvine. Additional equipment will be installed when completed.

*Pennsylvania, Reading. When the work on the additional two stories of the Berkshire Knitting Mills plant is completed, the company will make an increase in equipment of 40 new full-fashioned knitting machines, bringing the number up to 120 and the production to 8,000 dozen weekly.

Pennsylvania, Reading. The new building erected for S. S. Miller, manufacturer of men's and women's medum and gauze weight hosiery, now at Walnut and Thorn Sts., has been completed and the equipment of the old plant is being removed to their new quarters on 3rd St. The building is three stories of brick and is considered one of the finest manufacturing buildings in the city.

*Pennsylvania, Williamstown. The Durbin-Mellon Hosiery Co., manufacturers of seamless half hose, have sold some of their old coarser gauge knitting machines and are installing new up-to-date fine gauge machines. This gave rise to an incorrect report that the firm was selling their machinery with a view of retiring from business, which is untrue. The real fact is that they are expanding and improving their plant.

Tennessee, Chattanooga. Contract has been awarded by the Davis Hosiery Mills for the erection of a brick addition in which the dyeing and drying equipment will be installed. The building is to be of two stories, 64 by 224 feet.

*Tennessee, Rockwood. The improvements to be made at the Rockwood Hills will include the addition of 20 footers, 40 ribbers and 8 loopers. It is not thought that the insallation of a power plant will call for any additional building at this time, nor has it been definitely decided whether the company will continue to use steam or whether they will generate their electricity.

*Washington, Olympia. The increase in the business of the Olympia Knitting Mills recently noted, will, it is expected, lead to the building of an addition to the factory this fall. The company has a capital of $25,000, James Mantin, president; C. J. Van Eaton, treasurer, and Sol Meyers, superintendent.

Wisconsin, Kenosha. The Chicago. The Chicago-Kenosha Hosiery Co. is reported as having increased its capital stock from $300,000 to $600,000.

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Mills Starting Up.

*Indiana, Mishawaka. Operations have been resumed in the Mishawaka Woolen Mfg. Co.'s plant, which has been closed owing to the accident wrecking the engine room. Work is being pushed on the new engine room, for which concrete foundations are being put in.

Pennsylvania, Lebanon. The plant of the Lebanon Textile Co., containing 51 knitters and 75 sewing machines, which has been shut down for some time, is about to be started up again. They are manufacturers of women's ribbed underwear which they sell through New York.

SILK.

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New Mills.

*Maryland, Frostburg. Regarding the report recently circulated to the effect that the Board of Trade was interested in a project to establish a silk mill here, Secretary Rice says that no definite steps have been taken as yet.

*New Jersey, Camden. Plans are being prepared for the American Artificial Silk Co. for the new plant previously reported to be erected by them. This company, capitalized at $1,000,000, for manufacturing artificial silk, succeeds the Art Fibre Co., until recently located in Norristown, Pa. Until the company's new plant is completed, they will have an office at 1015 Race St., Philadelphia, where Henry Bernstein, of Bernstein, Kauffman & Co., Philadelphia, vice-president of the new company, will be in charge.

*New Jersey, Paterson. Plans have been approved and filed for the building for the French silk dyeing and printing concern of Pervilhac & Co. to be erected on the boulevard between Fourth and Fifth Aves. The proposed building is to be of brick and concrete structure, one story high, 175 by 175 feet.

*New Jersey, Paterson. The four-story building being erected by those interested in the Augusta Silk Mills, will not be used by the company for manufacturing purposes, but is being built to rent.

*New Jersey, Plainfield. The new plant of the T. J. Mitchell Co., manufacturers of broad silks, is expected to be ready by Sept. 15. It will contain 250 looms, operated entirely by electricity.

Pennsylvania, Allentown. It is reported that the Fleetwood Silk Co., which has recently been incorporated with a capital of $50,000, is to locate here.

Pennsylvania, Catasauqua. It is reported that the Catasauqua Silk Co., recently organized, has purchased land and buildings on Race St. and will install equipment for making broad silks. Frank Schleicher is superintendent and agent for the company.

Pennsylvania, Collegeville. It is reported that C. A. Greiner, formerly superintendent of the Art Fibre Co., located in Norristown, in conjunction with capitalists in this city and Norristown are

about to start up a plant for the manufacture of artificial silk at Collegeville, Pa. Buildings have been secured in that town which are being put in condition for this purpose and the machinery will soon be installed.

*Pennsylvania, Emaus. Work has been started on the new mill for the Excelsior Silk Co. This is to be a 50-loom plant for the making of broad silks, of which E. J. Stansfield is president and treasurer.

Pennsylvania, Hawley. It is reported that a new silk throwing mill is to be opened here by the Nino Bros., and that the mill formerly used by William Gibbs as a glass cutting factory will be used for the new enterprise.

*Pennsylvania, Northampton. The new mill building being erected here by A. W. Hirst, and previously reported as likely to be occupied by a knitting mill, is for D. G. Dery, manufacturer of broad silks, and will furnish space for 250 looms. Sixty additional looms have recently been placed in the Dery mill at So. Bethlehem and 50 at the Emaus mill.

Pennsylvania, York. It is reported that a charter will be asked for Sept. 10 for the Souter Silk Mfg. Co. Sydney H. Souter, formerly president of the Souter Silk Co. of Milton, whose plant was taken over by the Susquehanna Silk Mills, is to be in charge of the mills, which will be located in the former quarters of the York Cotton Co., Highland Ave. and Monroe St., West York, now out of business. The report states that about 25 looms will be installed in the beginning.

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Enlargements and Improvements.

Connecticut, New Hartford. Considerable machinery has been delivered at the old Greenwood Mills, which are to be occupied by the Touraine Silk Co. An official of the company is quoted as saying that within two years, they will have a force of 1500 operatives at work, and that two large buildings are soon to be be built for the weaving department.

Connecticut, Taftville. It is reported that work has been commenced on a $10,000 addition to the plant of the J. B. Martin Co., silk velvets. This is to be of brick, 60 by 50 feet, and will be used for a stockroom and inspection department, its two stories adding about 6000 square feet to the floor space. The company is reported to be in full operation, with outlook for a busy season.

*Massachusetts, Hyde Park. The new mill building for C. Stohn will be ready in about four weeks. The mills at Jersey City and Jamaica Plain, Mass., will be combined in this new plant, as previously reported. Fancy vestings and corset cloths are made.

New York, Binghamton. The J. & D. D. Miller Co. has been incorporated with a capital of $100,000, by James and David D. Miller and George Fowler, all of Binghamton. J. & D. D. Miller, manufacturers of broad silks, operating 60 looms, were formerly interested in the Portland Silk Mills at Middletown, Conn. It is said that their present quarters are leased and that the erection of a new factory is contemplated.

*New York, Hornell. The addition to the Huguet Silk Co. has been completed, and it is expected that the new machinery will be installed so that work will begin soon after September 1.

*North Carolina, High Point. Eight looms have been started in the new silk weaving department of Stehli & Co.,s mill, operated by new hands recently taken from the throwing and twisting departments, under the direction of a Swiss expert. Four kinds of fine colored dress goods are being woven.

Pennsylvania, Allentown. It is reported that the Keystone Textile Co. manufacturers of broad silks, are to make a large addition to their plant at So. Allentown.

*Pennsylvania, North Wales. Charles Stringer, manufacturer of spun silk yarns, is building an addition to his plant, 50 by 40 feet, two stories high, which will be finished in about a month. This will contain additional machinery. Mr. Stringer reports that he has double the orders that he can take care of at present.

Pennsylvania, Philadelphia. The Liberty Silk Mills, S. Posner, proprietor, formerly located at Paterson, N. J., have been removed to the Ontario Mills, on 2d St., above Columbia Ave., and consolidated with the plant formerly operated by Frank Wolgamuth and recently sold to Mr. Posner. The combined plants have an equipment of 60 looms, which are being run on broad silks, satins, satin Duchess Dutchess, porticines and messalines. In addition to silk, 2/50 and 2/40 cotton and mercerized yarns are bought. Product is sold through New York.

Pennsylvania, Sunbury. The Susquehanna Silk Mills, H. Schwiewind, Jr., president, have finished the installation of a plant for printing, extracting and finishing fabrics up to 54 inches wide. The company's plant here operates 800 looms on silk and silk mixed goods. They have branches at Jersey Shore and Lewiston, with New York office at 18 West 18th St.

*Vermont, Granville. The Clark Texile Co., of Saratoga Springs, previously reported to establish a branch mill here, advises us that branch plant will be established at the most desirable location available, and this has not yet been decided upon to their entire satisfaction.

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Mills Starting Up.

Pennsylvania, Hanover. The mills of the Hanover Silk Co., which have not been running for a long time, have been started with a small force which it is thought will soon be increased. The company has an equipment of 50 looms for silk ribbons and novelties, and Mr. T. J. O'Neil, the former superintendent, is in charge.

MISCELLANEOUS.

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*California, Sacramento. It is said that all but a small part of the stock of the Sacramento Ramie Co. has been subscribed, and that a meeting will

soon be called for the purpose of filing articles of incorporation and organizing the company. As soon as the success of the degumming process is assured, and the value of the fibre commercially certain, it is the intention of the company to go ahead with the establishment of the plant at Sacramento.

Massachusetts, Indian Orchard. A night force is at work installing a large number of new art-square looms at the plant of the Hodges Fibre Carpet Co. This addition to the equipment is said to be due to the inrceased business in the rug department.

New York, Brooklyn. The plant of the Planet Mills Mfg. Co., a $1,000,000 corporation, has been closed and it is reported that the business will not be continued. The employees have been offered work at the plant at Wilmington, Del., formerly operated by the company but recently purchased by A. F. Crichton, the general manager. Nothing definite is known as to the future of the Carroll Street establishment. The company made jute yarns, twines, etc.

*New York, Buffalo. The increase in the capital stock of the Buffalo Textile Co. to $75,000 will not be followed by any new building work. Four new looms are to be added to increase the output of finished auto castings and tubes.

Pennsylvania, Philadelphia. Arthur Jones, manufacturer of Smyrna Rugs and floor coverings, whose mill and its equipment was recently destroyed by fire, reports that the buildings are being repaired and put into condition again. New machinery will be installed within a few weeks. It is expected to have the plant located on Jasper St., near Tioga, in operation again within a month.

*Rhode Island, Pawtucket. The new building of the Providence Braid Co., the offices, stockroom, shipping and finishing rooms, at Pawtucket Ave. & Carver St., has been completed and is now occupied. The old building is to be used entirely for weaving. An addition of 500 braiders will be made to the equipment, more than half of which have been received.

*Rhode Island, Pawtucket. The Kingston Knitting, Dyeing & Bleaching Co. has been incorporated with a capital of $20,000, to carry on the business of dyeing and bleaching cotton, worsted and woolen yarns and fabrics. The incorporators are Frank A. Morrill, John J. Heffernan and Trubee Burrows, mentioned in last issue as having leased the property formerly operated as a bleachery by James F. Barry.

Wisconsin, Baraboo. The Baraboo Towell Mills of Geo. McArthur & Son have largely increased their capacity by the installation of new machinery and the employment of additional help, and the company now has a monthly payroll of $10,000. They have been running 18 broad and 40 narrow looms on turkish towels and crashes.

FAILURES AND SUSPENSIONS.

Missouri, Kansas City. A petition in bankruptcy was filed on July 24 by the Star Underwear Mills Co., through its secretary and treasurer, Samuel A. Walker. The liabilities are given as $4422 and the assetts as $5089. The company operated 21 knitting machines and 18 sewing machines on flat and ribbed underwear and unoin suits.

FIRES.

New York, Albany. The Capital City Dye Works, located on North Lake Ave., has been destroyed by fire. Loss is estimated at about $3,000.

New York, Little Falls. It is reported that the buildings occupied by the Little Falls Fibre Co., located on Mill St., have been damaged by fire. The plant contains 12 garnetts, 10 preparers and 2 cards, which are operated on cotton batts, felts and shoddies.

New York, Little Falls. The plant of the Rex Knitting Co., Main and Furnace Sts., has been damaged by fire. The company manufactures sweater coats and men's ribbed underwear, operating 11 sets, 3,300 mule spindles and 50 knitters. Production is sold through Clift & Goodrich, N. Y.

New York, Utica. A small fire did $1000 damage to the mills of the Utica Knitting Co.

Ohio, Dresden. The Dresden Woolen Mills were slightly damaged by fire which started in the dye house.

Pennsylvania, Philadelphia. Fire is reported as having damaged the plant of Thomas Davies, manufacturer of upholstery goods at Orthodox & Large Sts, Frankford. The loss at ths time is unknown, but the damaged portion of the mill will be repaired at once.

Pennsylvania, Philadelphia. A fire which started in the office of the Orient Knitting Co., located on the fourth floor of the building at the corner of Mascher and Turner Sts., damaged the plant to the extent of $5,000. Plant is run on ladies' and misses' seamless cotton and mercerized hosiery. A. D. Irwin & Bro., also located in the building, manufacturing cotton and worsted dress goods and cassimeres, are also reported as sustaining a considerable loss from water.

Rhode Island, Woonsocket. About $2,000 damage by fire was done to stock stored in a part of the card room of the Woonsocket Spinning Co.

FACTS AND GOSSIP.

Canada, Alberta, Calgary. A Mr. Crarae of the North of Ireland Flax Growing Association is said to have arranged a meeting with the farmers for some time in September to consider the establishment of a flax mill for the utilization of flax and flax straw, making of binder twine, etc.

Canada, New Brunswick, St. John. It is reported that interests connected with the Canadian

Colored Cotton Co. have secured control of the Cornwall and York Mills through the purchase of stock. It is not thought that this will mean any change in the management of the mills, and that they will continue to run on full time as at present. Enlargements, on the other hand, are probable.

Connecticut, Elmville. The plant of the Glen Worsted Co., formerly located at Harrisville, R. I., is being run day and night, with two sets of help, to fill orders for immediate delivery

Connecticut, Stafford Springs. It is reported that A. I. Mitchell, formerly agent of the Warren Woolen Co., who has recently returned to this country after an absence of some six months, is to purchase the mill property of the Cyril Johnson Woolen Co., and will continue the manufacture of the line of goods made under his management at the Warren Woolen Co. The mill has an equipment of 8 sets of cards and 45 looms and has been running on kerseys and broadcloths. J. K. & L. S. Weiner & Co. will be selling agents.

Delaware, Dover. The Board of Trade is negotiating with a knitting mill in another city, employing about 15 hands, which desires to move to Dover and employ 25 or 30 hands. The matter is in a preliminary stage, and it is not certain that the change will be made.

*Georgia, Atlanta. F. W. Stone, trustee of the Elizabeth Cotton Mills, which were petitioned into bankruptcy as previously reported, has been directed by the referee to advertise the sale of the property in bulk, bids to be opened Oct 3. The mills are equipped with 11,000 spindles and 300 looms for making fancy cotton goods.

Georgia, Dalton. It is reported that Geo. W. Hamilton, president of the Crown Cotton Mills, is interested in the establishment of a 15,000-spindle mill, to be located at some other point than Dalton.

*Georgia, Senoia. Findings in favor of the Senoia Duck Mills have been returned by Clarence Bell, to whom the issues nvolved in the involuntary petition in bankruptcy filed against them were referred. His findings in fact and law are that they were solvent at the time and that the acts of bankruptcy alleged in the application were not committed.

Louisiana, New Orleans. The receivership of the Textile Mills Corporation has been dissolved by the Federal Court, on petition of the receivers. It is said that the Lane Cotton Mills will be formed into a new corporation by the bondholders and the mills put into active operaton.

Maine, Auburn. An increase in the capital stock of the Little Androscoggin Water Power Co., controlling the Barker Mill, has been authorized, from $340,000 to $840,000.

Maine, Camden. The S. G. Hall Mfg. Co., manufacturers of woolen and worsted men's wear, whose lease of the Mt. Beattie Mill expired, have given up the mill and expect to fill the orders which they have on hand in a mill which Mr. Hall has looked over in Massachusetts.

Maine, Portland. The Eureka Chemical & Worsted Co. has been incorporated under Maine laws with an authorized capital stock of $500,000, to manufacture yarns, threads and cloths and deal in dyestuffs and other chemicals. The board of directors are W. A. Mott and Harry Brown, of East Greenwich, R. I.; Wm. E. Wilcox, of North Kingston, R. I.; Geo. M. Seiders, E. M. White, H. W. Perkins and Frederic Laughlin, of Portland, with Mr. White as president and treasurer.

Massachusetts, Pittsfield. The new quarters of the Warren F. Clark dye works at 260 Columbus Ave. are completed and occupied, and about 20 hands are employed under Supt. Bailey. The new plant is up to date in every respect and a feature is a lighting system which permits of work on delicate fabrics at night.

Michigan, Flint. The property of the Flint Woolen Mills Co. has been sold to the city, the site to be used for a market. The plant is being dismantled and the machinery will be sold. The equipment is said to include three particularly good sets of cards.

Minnesota, Fergus Falls. The Fergus Falls Woolen Mills are reported as running on a full time schedule, with some of the departments working overtime.

*Missouri, St. Louis. The Lowell Bleachery, of Lowell, Mass., is to take up the option it holds on land here for its branch, as previously described, but building operations are not contemplated for nine months or a year.

New Hampshire, East Rochester. Business at the mills of the Cocheco Woolen Mfg. Co. is reported as very good, more looms being in operation than for many months past, and it is understood that the company has sufficient orders ahead for its line of thibets, broadcloths, cassimeres, etc., to keep them busy until spring.

New Hampshire, Peterboro. It is reported that the Union Mfg. Co. is to go out of business and has sold the plant to the Monadnock Mills, of Claremont. The Union Mfg. Co. made quilts, operating 1,872 ring spindles and 64 broad looms.

New Jersey, Newark. An involuntary petition in bankruptcy has been filed by creditors against the Newark Textile Co., manufacturing silk winding and tubing.

Paterson, N. J. The Franco American Velvet Co. has been incorporated with a capital of $100,000. Harry S. Schultz, 346 St. Nicholas Ave., New York; Harry Bartlett Crosby of the First National Bank of this city and Henry C. Allen also of this city, are mentioned as interested.

New Jersey, Paterson. The Henry Doherty Silk Co. report a decided improvement in their line of silk goods, both the Lake View mill and the Hall mill running all looms on full time. The company operates 1200 looms on broad silks.

New Jersey, Paterson. Mr. George Bethel, head of the firm of John Bethel & Sons, of Manchester, England, manufacturers of linings, is visiting in

this city, and one of the objects of his visit to this country is said to be the location of a site for an addition to the company's three plants in England. He will make a tour of this country and Canada.

New Jersey, Paterson. The Helvetia Knitting Mills have been started up here by J. Schearer, who is manufacturing sweater coats and selling direct.

*New Jersey, Perth Amboy. The deal whereby it was hoped to get the Victory Silk Co. of Paterson to locate here in a mill to be built for them, has been abandoned for the present. It is said that negotiations with this end in view may be opened later.

New Jersey, Woodbine. The Coast Knitting Co., manufacturing sweaters and sweater coats on 62 knitting and 20 sewing machines, by electric power, have arranged with their creditors for a settlement of their affairs on a basis of 30 per cent. and have again started up their plant. They sell through New York.

New York, Brooklyn. The Liberty Knitting Mills have been incorporated with a capital stock of $20,300, by Samuel Palley, Wolf Natelson and Raes Leindellman. The papers were filed for the purpose of incorporating the New York business of the company, whose factory is in Brooklyn, where sweater coats, bathing suits and jerseys are made.

*New York, Cohoes. The Root Mfg. Co., the Fuld & Hatch Knitting Co. and the Wright's Health Underwear Co. are among the concerns mentioned as to sign an agreement with the Cohoes Co. for power. The latter company proposes to electrify its canal and provide power for manufacturing purposes.

*New York, College Point. The R. A. Weber Silk Dyeing Co., recently incorporated with a capital stock of $50,000, takes over the College Point Silk Dyeing Co., and skein silk dyeing will be done as before. R. A. Weber is president and Rudolph H. Weber, treasurer.

Pennsylvania, Auburn. The proprietors of the Walborn Knitting Mills, manufacturers of women's ribbed underwear, operating 7 body frames, 1 sleever and 6 sewing machines, are offering their plant for sale as a going concern. The sale will also include the building and two lots adjoining.

Pennsylvania, Auburn. A recent report states that W. G. Fant has sold his interest in the firm of W. H. Diefenderfer & Co., makers of ladies' and children's cotton ribbed underwear, to Mr. W. H. Diefenderfer, who will continue the business.

Pennsylvania, Chester. About $3,000 damage was done to the mercerizing department of the Aberfoyle Mfg. Co. by the explosion of a boiling tank, which tore off the roof and a part of one side of the building.

*Pennsylvania, Frankford. At the first meeting of the creditors of Coates Bros., makers of silk and mercerized hosiery, C. Wilfred Conrad was appointed trustee, and a committee of appraisers, consisting of Theo. L. Cobalt, H. E. Barnes and another to be named later, was also appointed. Further action will be taken Sept. 15.

Pennsylvania, Philadelphia. J. & E. Dawson, beamers and dressers of warps at Palethorp and Somerset Sts., have installed 12 looms which they are about to operate on carpets and automobile robes, which they will sell direct. They are buying woolen, worsted and cotton yarns. H. A. Dawson is the superintendent and buyer.

Pennsylvania, Philadelphia. Chas. E. McKaig & Co., whose plant at Emerald and Adams Sts. has been shut down for some time, are offering the equipment for sale. They manufactured men's, women's and misses' seamless cotton hosiery on 250 knitters, selling the production through New York.

Pennsylvania, Philadelphia. Arthur H. Gulliver, manager of the Wyoming Spinning Mills at Norristown, Pa., has been appointed manager of the local offices of Greene & Co., dealers in cotton yarns in New York. Mr. Gulliver will continue direction of the mill in Norristown as heretofore.

Pennsylvania, Philadelphia. The Courts of this city have decided that Mrs. Susan A. Sullivan, widow of the late James J. Sullivan, and administratrix of his estate, is entitled to 1,666 shares of stock of the J. Sullivan & Sons Manfg. Co., manufacturers of cotton and silk narrow fabrics, with mills at 9th and Montgomery Ave. and 2224 N. 9th St. This stock it is declared carries with it about $100,000 of accumulated dividends.

Pennsylvania, Philadelphia. A charter has been asked for the Campbell Hosiery Manufacturing Co., with a capital of $5000 The company is now engaged in the manufacture of 228 needle women's seamless hosiery of cotton and mercerized yarn at at Jasper & York Sts., where they are operating 20 knitters with A. Wilson Campbell as proprietor and doing a good business selling through New York.

Pennsylvania, Philadelphia. The John T. Bailey Co., manufacturers of rope and bagging, have recently purchased from the McCahan Sugar Refining Co., the tract of land adjoining their property on the south side of Tasker St., from Swanson to Water St., 305 feet on Tasker St., by 14 feet, 6 inches on Water and 80 feet on Swanson St. The purchase price is given as nominal.

Pennsylvania, Philadelphia. Application has been filed for a charter for the incorporation of the firm of Isaac Lockhart & Sons, to operate the plant hitherto run by Isaac Lockhart, Howard St. and Montgomery Ave., manufacturing ingrain carpets. Andrew Lockhart and William Lockhart will be associated with Mr. Isaac Lockhart in the new company.

Pennsylvania, Philadelphia. Bush & Terry's Manhattan Mills at Jasper & Thayer Sts., manufacturers of axminster rugs, have been running until nine o'clock at night for several months past.

Pennsylvania, Philadelphia. The Almeda Mills of the Moore Mfg. Co., makers of dress goods,

which it was reported would start their full equipment on Aug. 1, are still running on a shortened schedule. It is understood, however, that the number of looms running is being increased.

*Pennsylvania, Philadelphia. The assets of David Greer, recently adjudged bankrupt, were sold at auction to Daniel F. Waters, of Germantown, the sale price being $5,300. The plant contains 90 narrow looms, which were operated on men's wear and dress goods.

Pennsylvania, Philadelphia. Walter A. Lorimer has transferred to the Armat Knitting Mills title to the three-story brick factory building and one-story dye house on Armat St., below Germantown Ave., Germantown, for a nominal consideration subject to a mortgage of $10,000. The property measures 226 feet, 10 inches, and is assessed at $17,000. Mr. Lorimer is the president of the Chemnitz Manufacturing Co., which is now operating under a New Jersey charter with a capital of $100,000, on women's, infants' and misses' seamless cotton hosiery, with 89 spring and 33 latch needle knitters, 16 ribbers, 21 loopers and 6 sewing machines, the plant being under the management of Philip Hoffman. This company will be succeeded by the Armat Knitting Mills which has applied for a new charter under the laws of Pennsylvania, and who will take over the plant as soon as the new charter has been granted.

Pennsylvania, Philadelphia. It is reported that Thomas Allen, of Frankford, has purchased the plant operated by Sansfield & Birnie, at the rear of 2646 B St. and will start it up, making a line of silk and cotton fabrics. This mill was formerly run on men's wear and dress goods.

*Pennsylvania, Philadelphia. It is reported that Murphy & Bro., manufacturers of cotton, woolen and worsted goods, are to concentrate their plants at 16th and Fitzwater Sts. and Chester, Pa., in the property purchased by them at the auction sale of the Southwark Mills in April, located on Reed, Dickerson, 31st and 32d Sts. Their West End Woolen Mills Co., it is believed, will be continued as at present. All three mills have been running continuously through the dull period.

Pennsylvania, Philadelphia. George W. Lefferts & Co., spinners on commission, of worsted yarns (Bradford system) at 23d and Hamilton Sts., where they operate 2,700 spindles, report operating to their fullest capacity, with plenty of future business.

Pennsylvania, Philadelphia. The Germania Worsted Mills, Indiana Ave. and A St., manufacturing dress goods, are putting all the looms in the plant in operation, including a number purchased about a year ago, but never started.

*Rhode Island, Niantic. The first of the big buildings for the Bradford Dyers' Association will be divided into six rooms, one of which is 230 by 100 feet, another 230 by 180 feet, and another 62 by 300 feet, besides which the building will contain the engine room, 40 by 60 feet, boiler room, 60 by 150 feet, and machine shop, 60 by 80 feet. This building will comprise one-sixth of the plant which is planned.

Rhode Island, Pawtucket. The Royal Weaving Co. is offering to stockholders of record Aug. 1 a new issue of $500,000 of common stock, par value, $100, at the rate of one share of new stock for each three shares held, rights being good until Aug. 15.

*Rhode Island, Providence. A large part of the machinery has been moved from the Thornton to the Providence mill of Geo. E. Boyden & Son, and the sale of the silk hosiery department, recently reported, is perhaps accountable for the rumor that the Thornton plant is to be sold.

*South Carolina, Charleston. Judge Smith of the U. S. District Court has referred to Referee Hughes the petition of the Royal Bag & Yarn Mfg. Co. to be adjudged bankrupt. This company was previously reported as in process of liquidation. E. C. Hesse, president of the company, was made temporary receiver. The liabilities are given as $283,192, and the assets, $668,230.

*South Carolina, Charleston. It is reported that the plant of the Victor Bagging Factory, which has gone into liquidation, has been sold to Savannah parties.

*South Carolina, Chester. It is considered probable that the stockholders of the Wylie Mill will accept the proposition to join the Parker Cotton Mills Co., in which event it is reported that practically a new plant will be built. The Wylie Mill makes 8s to 40s yarns with an equipment of 20,160 ring and 8,000 twisting spindles. It is stated that the erection of a weave shed is contemplated, to contain some 600 looms, for manufacturing cloth, using the yarn production. The Wylie Mill was mentioned in a previous report as likely to be included in the Parker merger.

South Carolina, Denmark. It is reported that the Industrial Department of the Seaboard Air Line is considering the erection of a $300,000 cotton mill here of 15,000 spindles.

*South Carolina, Greenville. The Parker Cotton Mills Co. announce that they have acquired control of the Ottaray Mills at Union, S. C., and the Pine Creek Mfg. Co. at Camden, S. C. These mills were mentioned in a previous report as among those likely to be included in the merger.

*South Carolina, Jonesville. The property of the Jonesville Mfg. Co., against which company an involuntary petition in bankruptcy was filed, as previously reported, has been sold to H. J. Haynesworth, as attorney, the consideration being given as $125,000. Mr. Haynesworth is said to be a director, as well as general counsel, for the Parker consolidation, and it is thought that the property is to be included in this merger. The plant is equipped with 15,000 spindles and 400 looms.

South Carolina, Winnsboro. A report states that the stockholders of the Fairfield Cotton Mills have approved the plan to join the Parker Mills consolidation on a share for share basis for the preferred stock and three shares of Fairfield common for two shares of Parker Mills common stock. This company was mentioned in a previous report as among those likely to be included in the merger.

New Publications

[Any work noticed under this head can be obtained through the office of this journal.]

The Year Book for Colorists & Dyers, by Herman A. Metz & Co., 122 Hudson St., New York; 391 pages, 5 by 7.

We have received the thirteenth volume of this well known annual which gives an account of the development of dyeing, bleaching and printing during the year and also contains the reference tables appearing in previous issues. The author states that the most interesting point in this volume is the further development of the vat colors and the extension of their use in both dyeing and printing. Following is the table of contents: The Color Industry in America; Patents for the Year 1910; Notes on Processes, New Colors, etc.: Educational; List of Dyestuffs, Makers and Methods; Miscellaneous Notes.

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BUSINESS LITERATURE

"The Electrical Installations in the Detroit River Tunnel Plant;" The Gould Storage Battery Co., 341 Fifth Ave., New York.

This bulletin describes the Gould battery and allied regulating apparatus by means of which current from the Detroit Edison Company's plant is made to pull Michigan Central trains through the new Detroit River Tunnel. The engineering in connection with this installation is unusual and of special interest to those having excessive peak loads. A copy may be obtained by asking for Bulletin No. 12.

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Cookson Cast Iron Heaters and Receivers with Cut-Out Valves; Bates Machine Co., Joliet, Ill.

This heater serves as a purifier, filter, oil separator, and condensation receiver and possesses the special feature of being able to purify all the exhaust steam from the engines and auxiliaries. The new type of oil separator used on this heater is provided with cut-out valves that permit cleaning of the heater body without interference with the functions of the oil separator. This catalogue is sent free upon application.

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The Model Automatic Smokeless Furnace; The Model Stoker Co., Dayton, O.

A 48-page catalogue describing and illustrating the model automatic smokeless furnace, which is complete in itself, including not only grates and suitable fronts, but also double coal magazines, one of each side, stoking and cleaning mechanisms, and an engine with connections for operating all parts. This furnace has now been in use seven years and given excellent results.

Kerr Turbine Catalogue No. 19 (48 pages 6 by 9) has just been issued by the Kerr Turbine Co., Wellsville, N. Y.

This catalogue is a thorough treatise on the theory, construction, uses and advantages of small steam turbines for driving generators, pumps, blowers, and other small high speed machines. Numerous data and illustrations make this catalogue a reference work that is well worth filing.

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The Blackburn-Smith Pressure Filter; James Beggs & Co., 36 Warren St., New York.

This filter is based upon small easily removable and renewable cloth-covered cartridges for removing suspended matter from hot or cold water, and is useful in the clarification of a murky water supply, removing oil and slime from boiler water or for clarifying the water in processing systems.

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Hydraulic Pumps, Catalog No. 81; The Watson Stillman Co., New York.

A new 120 page 6 by 9 catalog, descriptive of many standard and several new types of hydraulic pumps, built by the Watson-Stillman Co., 50 Church St., New York. It contains valuable information for hydraulic engineers and users of hydraulic machinery.

Industrial Notes

LOCKWOOD, GREENE & CO.

The Greers Mfg. Co., Greers, S. C., have appointed Lockwood, Greene & Co., of Boston, Mass., and Greenville, S. C., as architects and engineers for the enlargement of their plant. The new building of standard slow burning mill construction will be 130 feet long by 100 feet wide and four stories high. Its equipment will consist of 15,000 spindles, 450 looms and accompanying machinery for the manufacture of cotton cloth thus increasing the company's total spindles to about 25,000, and the looms to about 700. The building will be erected by the Gallivan Building Co., Greenville, S. C., who also have the contract for a two-story, 50 by 100 feet extension to the Greers warehouse. The enlargement when completed will require about 150 operators.

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GOLD TRANSFER STAMPS

The Meyercord Co., the American manufacturers of decalcomania transfer products for textile goods, report that they are doing a very satisfactory business. Their gold stamps are now used in many of the leading mills, from which they have received most gratifying testimonials as to their superiority. The brilliancy and permanency of the stamps are among the recognized advantages. Their customers comprise the leading hosiery and knit goods manufacturers.

DIVIDENDS OF GERMAN TEXTILE WORKS

Consul Thomas H. Norton, Chemnitz, reports that the textile manufacturing interests of Germany exhibit a balance sheet for 1910 less favorable than that of the preceding year. The capital invested in German textile works now amounts to somewhat over $127,000,000. During the first four months of 1911 178 different firms, representing a capitalization of $83,000,000, published the results of their business for 1910. While these firms represent but two-thirds of the total capitalization in this branch, these published results are fairly representative of the average conditions prevailing throughout the entire industry during the past year. The 178 firms in question possessed in 1909 a capitalization of $81,000,000. During 1910 capital was increased to the extent of slightly over $2,000,000. The dividends on the capitalization of 1909 amounted to $7,900,000; on that of 1910 to $7,200,000, a noticeable diminution in actual profits. The average dividend rate for 1909 was 9.9 per cent.; that for 1910, 8.7 per cent.

The dividend rates among the different branches of textile industry were quite variable. The cotton industry offers the most unfavorable showing in comparison with 1909. The increased cost of raw cotton and a lessened demand for manufactured products are both reflected in the lowered dividends, especially in those of cotton-spinning mills.

The following table reveals more fully the very marked setback experienced last year by the German cotton-textile interests:

Branch	Number of Firms	Capital		Dividends		Rate	
		1909	1910	1909	1910	1909	1910
						Per cent	*Per cent*
Spinning mills	30	$10,600,000	$10,700,000	$1,010,000	$650,000	9.5	6.1
Weaving mills	10	2,400,000	2,400,000	230,000	200,000	9.7	8.4
Spinning and weaving mills	30	13,300,000	14,200,000	1,050,000	840,000	8.0	5.9

As will be noticed, spinning establishments have suffered much more seriously than weaving mills from the conditions prevailing during 1910.

Other branches show less unfavorable figures, although the dividend rate for silk weaving (based, however, on the report of but two firms) shows a fall from 12.5 per cent. to 9.2 per cent.

Woolen industries have suffered comparatively little. The reports from 22 yarn mills, possessing a total capital of $15,000,000, give an average dividend of 11.2 per cent. for both years. The average dividend rate of 23 other woolen mills (weaving, etc.), possessing a capital of $16,000,000, was reduced from 10 per cent. in 1909 to 9.2 per cent. in 1910.

Linen and jute spinning mills show lessened profits. Reports are given from 21 establishments possessing a capital of $10,000,000. The rate fell from 8.2 per cent. in 1909 to 7.1 per cent. in 1910.

The remaining establishments classified as textile works show an average increase in dividends from 12.8 per cent. to 13 per cent. Dyeing and finishing works also exhibit an increase from 4.4 per cent. in 1909 to 4.8 per cent. in 1910.

PACIFIC MILLS ORDERS CURTIS TURBINE

The Pacific Mills, Lawrence, Mass., have placed an order with the General Electric Company for a 1,000 k. w., 3-phase, 60-cycle, 600-volt horizontal Curtis turbine. Over 11,000 h. p. of General Electric motors are now installed in these mills.

GOULD MFG. CO.'S PICNIC

The annual outing of the Goulds Manufacturing Co., of Seneca Falls, N. Y., was held the last week of August at Cayuga Lake Park, and took the form of an athletic meet. It was witnessed by nearly 2,000 people. All sorts of races were held, and the ladies as well as the men had an opportunity to compete for prizes in the different classes. There were gymkhana races, motor boat races and all sorts of interesting events. This is the first picnic held by the Goulds company, but they appreciate the value of cementing their organization more closely by getting all the employes together socially, and the success of this event confirms their idea that it is an excellent thing for all concerned and promotes harmony.

A SAN FRANCISCO BRANCH

The Crocker-Wheeler Company, manufacturers and electrical engineers at Ampere, N. J., announce the opening on September 1, of offices in San Francisco, Cal., located at Room 400, First National Bank Bldg. Motors, generators and transformers of various sizes will be carried in stock for immediate coast shipments.

Mr. John S. Baker, well known among the electrical trade on the Pacific Coast, has been placed in charge.

The William Firth Company erectors are just completing the erection of mules at the Booth Mfg. Co., New Bedford, Mass. These mules are of Asa Lees & Co.'s make.

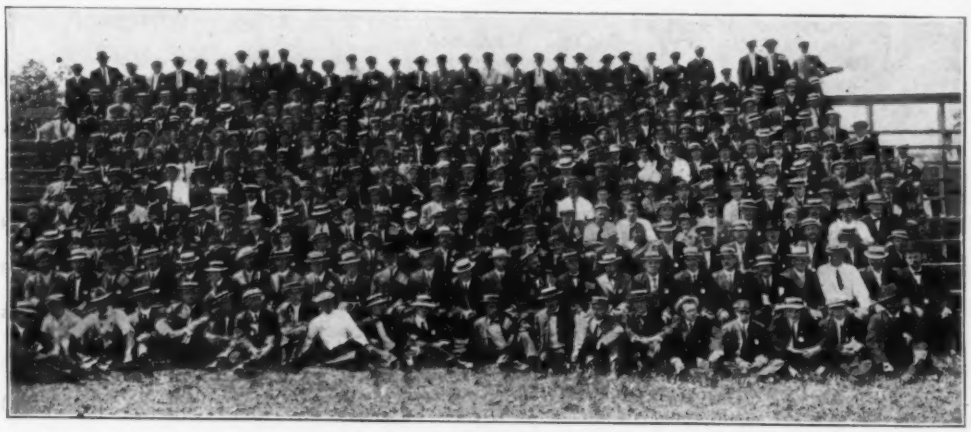
C. C. Bolin, superintendent of the Dan River Mills, Danville, Va., has resigned.

THE UNIVERSAL WINDING CO.'S OUTING

About 350 employes of the Universal Winding Co. had their outing at Rocky Point on August 5th. There was a long list of athletic events, including a boat race and ball game. Special cars carried a portion of the party from Providence, others going by trolley, motor boats and other conveyances. There were a quarter mile run, fat man's race, shot put, mile run, tug of war, potato race, 200 yard dash, relay race, 100 yard dash and boat race. Dinner was served at one o'clock. In addition to the employes of the company there were several invited guests present to enjoy the sport. Officials from the Boston office of the Universal Winding Company, including Treasurer R. A. Leeson, F. A. Bishop and F. French, were on hand, together with Frank J. Quinn of Philadelphia, E. A. Warren of Fall River, H. R. Lowe and George H. Thomas of the Thomas & Lowe Machinery Company, George Thompson of the New England Butt Company, Howard Kenney of the Wescott, Slade & Balcom Company, L. Billington of the Union Hardware Company and Fred and Albert Hallworth of the Providence Enamel Company.

Factory Manager Arthur L. Harvey and Superintendent William A. Booth took an active part in the enjoyments of the day and assisted in making the event a memorable one.

The prizes included clocks, cuff links, dress suit cases, loving cups, scarf pins and sweaters. The day will long be remembered with pleasure by all who were present.



A GROUP OF EMPLOYES OF THE UNIVERSAL WINDING CO. ON THEIR ANNUAL OUTING.

—÷—

The William Firth Company have just received a large order for mules from the American Thread Co. for their Willimantic Mills. This is the second order placed with them by this firm this year. The mules are of Asa Lees & Co.'s make, for which they are the sole agents for the United States and Canada, and are to spin numbers 70s to 180s.

THE MOORE LIGHT

The John Scott Legacy Medal and Premium has been awarded to D. McFarlan Moore by the City of Philadelphia upon the recommendation of the Franklin Institute. The certificate is signed by the Board of Directors of the City Trusts and by President Walton Clark of the Franklin Institute and by the secretary, Prof. R. B. Owens.

The award is made in recognition of Mr. Moore's scientific investigations and the development of the art of vacuum tube lighting covering a period of many years. This form of illumination is commonly known as the Moore light. It is furnished in two colors, yellow for general illumination, and white—a perfect duplication of daylight. The white Moore light is particularly well known, not only in the textile field, but also in many other classes of business requiring correct color values, including oil refineries, printers, lithographers, etc.

—÷—

The William Firth Company have lately completed erection of two orders for waste breaking up machines for the Utica Knitting Co., Utica, New York. These machines are William Tatham's & Co.'s make, for whom William Firth Co. are the sole agents for the United States and Canada.

—÷—

FINISHING COMPOUNDS

The Arabol Mfg. Co., 100 William St., New York, manufacture finishing compounds, sizings and starches of all kinds. They are constantly adding to their line and are prepared to meet any special need and local condition.

—÷—

George Ward has accepted the position as overseer of finishing at the Shawinigan Knitting Co., Shawinigan Falls, P. Q., Canada. He comes from the C. Turnbull Co., of Galt, Ont.

Recent Textile Patents

BOBBIN and spindle connector. 999,059. John Roney and John C. Rae, Woonsocket, R. I.

BOBBIN holder. 998,857. Thomas J. Murdock, Franklin, Mass.

DYEING apparatus. 1,000,589. Ernest de Journo, Allentown, Pa.

DYEING coloring matter, Vat. 999,439. Karl Elbel and Edward Wray, Biebrich, Germany.

DYEING and bleaching machine. 1,000,251. Tom Frusher, Brooklyn, N. Y.

DYEING machine. 999,304. Charles Frohlich, Amsterdam, N. Y.

DYESTUFF, Vat. 999,785. Max Hessenland, Hoechst-on-the-Main, Germany.

FABRICS, Ornamentation of open-mesh. 998,952. William H. Boone, Cincinnati, O.

FIBER cleaning machine. 1,001,487. Henry L. Vaughan, El Paso, Tex.

FIBER composition and making the same. 1,000,598. John B. Hall, Philadelphia, Pa.

KNITTING machine. 1,000,460. August C. Timming, South Bend, Ind.

KNITTING machine, Rib. 1,000,837. Joseph D. Morley, Utica, N. Y.

KNITTING strong work fabric. 999,734. William T. Barratt, Bennington, Vt.

KNITTING machine, Circular. 999,853. Exilias Paquette, Lowell, Mass.

KNITTING machine, Circular. 999,854. Exilias Paquette, Lowell, Mass.

KNITTING machine stop motion. 1,000,362. William Barratt, Bennington, Vt.

KNITTING machines, Stitch-transferring mechanism for circular. 999,287. Frank E. Wilson and Frederick Knapp, Amsterdam, N. Y.

KNITTING machine openwork attachment. 999,074. Harry H. West, Plymouth, Pa.

KNITTED coat. 999,345. Nathan Schwartz, Milford, Ill.

LOOM, Circular. 1,000,576. Carl O. Berg, Everett, Mass.

LOOM. 999,064. Edward S. Stimpson, Hopedale, Mass.

LOOM shuttle. 999,447. Moses Goulet, Northbridge, Mass.

LOOM, Narrow ware. 998,808. Merrill O. Steere, Pawtucket, R. I.

PRINTING machine, Yarn. 998,780. Thomas J. Kelly, Philadelphia, Pa.

SPINNING, twisting and doubling machinery. 13,276. Sebastin Z. de Ferranti, Grindleford, England.

SPINDLE dividing head, Multiple. 1,001,419. Louis Mastrangel, W. Hoboken, N. J.

TEXTILE conditing apparatus. 1,001,435. Isaac E. Palmer, Middletown, Conn.

WASHING or dyeing cops or similar articles, Apparatus for. 999,499. Eduard Herzog, Erlach, Austria-Hungary.

YARN-cleaner for spoolers, spinning and similar machines. 1,000,029. James R. MacColl and William B. MacColl, Providence, R. I.

RECENT TEXTILE TRADE MARKS REGISTERED

"Northland." Knit wearing apparel. The Northland Knitting Co., Minneapolis, Minn.

"Danish Poplar." Woolen and cotton piece goods. Hamilton Woolen Co., Boston, Mass.

"Imperial." Textile Rugs. McCleary, Wallin and Crouse, Amsterdam, N. Y.

"The Coquette." Ladies' short waists. Greenhut-Siegel Cooper Co., New York.

"Pearl.' Knitted Underwear. John F. Quinn, Cohoes, N. Y.

"Live Oak." Hosiery. Harris-Lipsitz Co., Dallas, Tex.

"Maline." Ladies knitted vests. The Maline Mills Co., Winston Salem, N. C.

"Uncle Sam." Pajamas, Night shirts, etc. The Argyle Co., New York.

"Sananet." Veilings and nettings. Theo. Tiedmann & Sons, New York.

"Peri-Lusta." Embroidery cotton. Campbell, Metzger & Jaconbson, New York.

"Palace." Woven carpets. Hardwick & Magee Co., Philadelphia, Pa.

"Q." Knitted Underwear. John F. Quinn, Cohoes, N. Y.

"Diploma." Printed cotton piece goods. William R. Moore Dry Goods Co., Memphis, Tenn.

"Aerpore." Woolen, worsted, silk, mohair and cotton piece goods. George J. Geer, New York.

"Aermoh." Woolen, worsted, etc., piece goods. George J. Geer, New York.

"Chebeco.' Textile Belting. Robert Hockaday, Baltimore, Md.

"Vanson." Hosiery. T. H. Vanneman Son & Co., Philadelphia, Pa.

"Minoru F. F. F." Hosiery. Walter Wesendonck, New York.

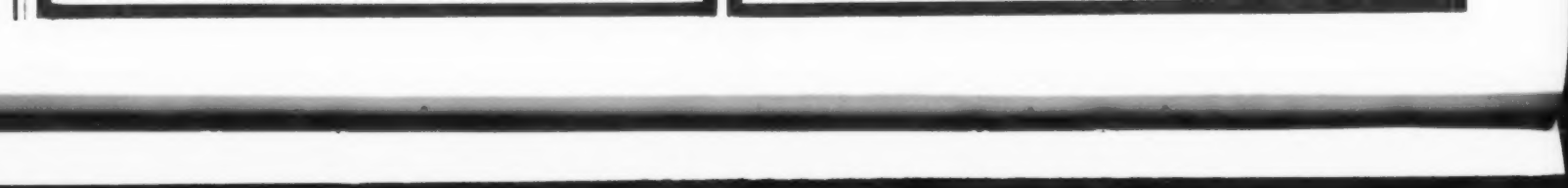
"The Ambassador." Men's half hose. Rice-Stix Dry Goods Co., St. Louis, Mo.

"Locksley." Piece goods of cotton, wool, etc. Wm. Simpson Sons & Co., Philadelphia, Pa

"U. M. C." Hosiery. The Union Mfg. Co., Frederick, Md.

"Frederick." Hosiery. The Union Mfg. Co., Frederick, Md.

"Monocacy." Hosiery. The Union Mfg. Co., Frederick, Md.



C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

COTTON WOOLEN WORSTED MACHINERY

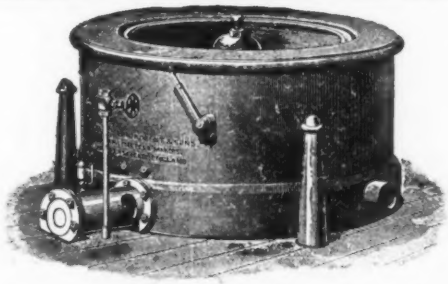
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN

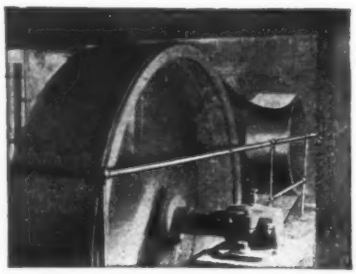


SUSPENDED ON LINKS. REQUIRING NO EXPENSIVE FOUNDATIONS

C. E. RILEY COMPANY, Sole Agents 65 Franklin St., Boston, Mass.

Machines Kept in Stock in Boston

Your leather belts are only animal matter. Will you let them perish quickly or will you preserve their health and vigor?



Power users often whip up a belt to do more work instead of putting it into better physical condition so it can work.

This is just what happens when some preparation is applied merely to change the character of the belt face.

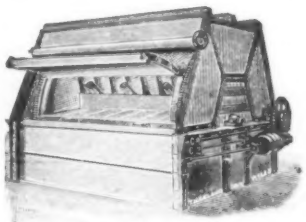
Cling-Surface is radically different, for it **lubricates** and **preserves** the interior fibers. The soft velvety moist surface which it imparts to the belt, and the consequent power of the belt to hug the pulleys without slip are merely secondary results of its use. Fundamentally Cling-Surface is a belt food, a basis for scientific belt treatment to lengthen belt life and put the belt **internally and externally** in the best physical condition to produce **constant** and **ultimate** high transmission efficiency.

That it does this well can be inferred from its constant use in thousands of prominent power plants. Try Cling-Surface at our risk. If the results do not justify our claims, the Cling-Surface used will not cost you one penny. Write for literature.

Cling-Surface Co

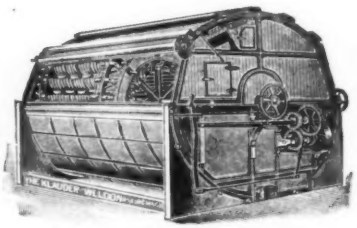
New York Boston Chicago Denver Atlanta Memphis Etc

1051 Niagara Street Buffalo N Y



RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK

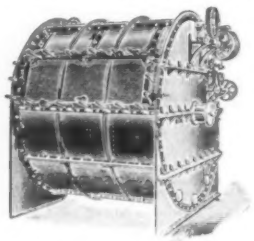


SKEIN AND SLUBBING MACHINE.

KLAUDER-WELDON DYEING MACHINE COMPANY

HUDDERSFIELD, ENGLAND. *AMSTERDAM, N. Y.*

Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.

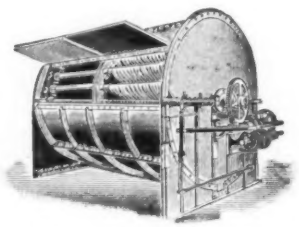


SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY

Southern Agent,
H. G. MAYER, Charlotte, N. C.



SULPHUR SKEIN MACHINE.

Buyers' Index

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classfication here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accountants.
American Cost Accountant Co.

Air Compressor Outfits.
National Brake & Electric Co.

Air Moistening System.
——See Humidifying Apparatus.

Aligning and Leveling Apparatus.
Kinkead Mfg. Co.

Architects and Mill Engineers
Cramer, Stuart W.
Ferguson, John W.
Main, Chas. T.
Weston, Robert Spurr.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
Harwood, Geo. S., & Son.
Kitson Machine Co.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Speed & Stephenson.
Woonsocket Machine & Press Co.

Babbitt (Anti Friction).
Exeter Machine Works.

Bale Ties.
Acme Steel Goods Co.

Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy. Co.

Bandings.
——See under Yarns.

Baskets.
Lane, W. T., & Bro.

Beams (Steel).
Mossberg, Frank, Co.

Beamers.
Knapp, C. H.
Crompton & Knowles Loom Works.

Belting.
Boston Belting Co.
Chicago Belting Co.
Gandy Belting Co.
N. Y. Leather Belting Co.
Rhoads, J. E., & Sons.
Williams, I. B., & Sons Co.
——See also Mill Supplies.

Belt Dressing.
Cling-Surface Co.
Dixon, Jos., Crucible Co.

Belt Lacing Machines.
Birdsboro Steel Fdry. & Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Arlington Mch. Wks.
Birch Bros. (Albert Birch, prop.)
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Danker & Marston.
Electro Bleaching Gas Co.
Niagara Alkali Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.

Blowers and Blower Systems.
Kitson Machine Shop.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Bobbins and Spool Machinery.
Defiance Machine Works.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Leigh & Butler.
Leistershire Spool & Bobbin Co.
Mossberg, Frank, Co.
Speed & Stephenson.
Tebbets, E. L., & Co.

Bobbin Winders.
Altemus, J. K.
Lever, Oswald, Co.
Universal Winding Co.

Boilers.
——See Steam Boilers.

Boxes, Box Shooks, Etc.
Pearson, J. T.

Box Strapping.
Acme Steel Goods Co.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brass Hinges.
Root, C. J., Co.

Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.

Brushing Machines.
Buhlmann, A. W.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.)
Taunton-New Bedford Copper Co.
Textile Finishing Mchy. Co.
——See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.

Cap Spindles.
American Textile Specialty Mchy. Co.
Hall, F. A. & P.
Speed & Stephenson.

Caps.
Calder Machine Works.

Carbonizing Machinery.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.)
Szepesi & Farr.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Card Clothing.
Ashworth Bros.
Buhlmann, A. W.
Howard Bros. Mfg. Co.
Howard & Bullough American Mach. Co.
Hartmann, Richard.
Leigh & Butler.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Speed & Stephenson.
Szepesi & Farr.

Carded Cotton.
Blaisdell, S., Jr., Company.
Wonalancet Co.

Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Buhlmann, A. W.
Dronsfield Bros.
Entwistle, T. C., Co.
Hartmann, Richard.
Leigh & Butler.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Speed & Stephenson.
Richards, Atkinson & Haserick.

Carpet Machinery.
Altemus, Jacob K.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.
Textile Finishing Machinery Co.

Castings.
Farrel Foundry and Machine Co.
Schofield, Wm., Co.

Caustic Potash.
Niagara Alkali Co.

Cell Driers.
Cell Drier Machine Co.

Cement Pans.
Scaife, W. B., & Sons.

Chain Belts.
Link-Belt Co.
Morse Chain Co.

Chemists.
Little, Arthur D., Inc.

Cling Surface.
Cling-Surface Co.

Clocks.
Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Richardson Brothers.

Cloth Expanders.
American Finishing Machinery Co.
Arlington Mch. Wks.
Birch Bros. Somerville Mach. Wks. (Albert Birch, prop.)
Leyland, Thomas, & Co.
Somerville Mach. Wks. (Albert Birch, prop.)
Textile Finishing Machinery Co.

Cloth Testers.
Scott, Henry L., & Co.
Suter, Alfred.

Cloth Winders.
American Finishing Machinery Co.
Firsching, J. A.

Clutches.
American Tool & Machine Co.
Hunter, James, Machine Co.

Coal.
Darrow-Mann Co.

Coal Analysis.
Little, A. D., Inc.

Combs (Wool and Cotton).
Crompton & Knowles Loom Works.
Hood, R. H., Company.
Emmons Loom Harness Co.
Leigh & Butler.
Philadelphia Textile Machinery Co.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Speed & Stephenson.

Condensers.
Dean Bros. Steam Pump Works

Alphabetical Index to Advertisers, with page numbers, follows this list.

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Kitson Machine Shop.
Sturtevant, B. F., Co.

Cop Machinery.
Eppiers, John, Mach. Works.

Cop Tubes.
American Textile Specialty Mchy. Co.
Hall, F. A. & P.
Pairpoint Corporation.
——See Paper Tubes.

Copper Expansion Joints.
Badger, E. B., & Sons Co.

Copper Print Rollers.
Taunton-New Bedford Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.
Textile Finishing Machinery Co.

Copper Work for Dyers.
Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Textile Finishing Machinery Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Wonalancet Co.

Cotton Machinery.
Altemus, Jacob K.
American Textile Specialty Mchy. Co
Ashworth Bros.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cramer, Stuart W.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Dixon Lubricating Saddle Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Houghton, L. T.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kitson Machine Shop.
Klauder-Weldon Dyeing Machine Co.
Lazenby, F. A., & Co.
Leigh & Butler.
Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Potter & Johnston Mch. Co.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford Co., The
Textile Finishing Machinery Co.
Textile Machinery Co.
Threlfall, Wm., Co.
Whitin Machine Works.
Wildman Mfg. Co.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh & Butler.
Potter & Johnson Mch. Co.
Richards, Atkinson & Haserick.
Riley, C. E., Company.

Cotton Softeners.
Bosson & Lane.
Charles, W. B.
Danker & Marston.
Harding & Fancourt, Inc.
Seydel Mfg. Co., The.

Cotton Waste.
Blaisdell, S., Jr., Co.

Cotton Waste Machinery.
Hartmann, Richard.
Kitson Machine Shop.

Counting Machines.
Beck, Chas., Co.
Root, C. J., & Co.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Creosote.
Carbolineum Wood Preserving Co.

Cutting Machines.
Beck, Chas., Co.
Eastman Machine Co.
Firsching, J. A.

Cylinder Oil (Superheated Steam).
Power Specialty Co.

Disinfectants.
Seydel Mfg. Co., The.

Dobbies.
Crompton & Knowles Loom Works.
Kilburn, Lincoln & Co.
Stafford Co., The.

Drawing Rolls.
Hood, R. H., Company.
Howard & Bullough American Mach. Co.
Metallic Drawing Roll Co., The.
Speed & Stephenson.

Drying Machinery.
Arlington Mch. Wks.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.)
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Drying Boards.
Bull, William C.
Pearson, J. T.
Philadelphia Drying Mchy. Co.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Globe Dye Works Co.
Home Bleach & Dye Works.
Hopkinson Dyeing & Textile Works.
Lorimer's, The Wm. H., & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
San-knit-ary Bleachery.
Standard Bleachery Co.
Utica Willowvale Bleaching Co.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Laundry Machinery Co.
Arlington Mch. Wks.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Consolidated H. S. & L. M. Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Franklin Process Co.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunt, Rodney, Mach. Co.
Hunter, James, Machine Co.
Jordan Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh & Butler.
Leyland, Thos., & Co.
National Laundry Machinery Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Psarski Dyeing Machine Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Somerville Mach. Wks. (Albert Birch, prop.)
Sturtevant, B. F., Co. (Drying).
Suter, Alfred.
Textile Finishing Machinery Co.
Threlfall, Wm., Co.
Tolhurst Machine Works.
U. S. Hoffman Co.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Klauder-Weldon Dyeing Machine Co.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Arabol Manufacturing Co.
Atteaux, F. E., & Co.
Badische Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Danker & Marston.
Electro Bleaching Gas Co.
Farbenfabriken of Elberfeld Co
Harding & Fancourt, Inc.
Innes Speiden & Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Holliday Read & Sons, Ltd.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Niagara Alkali Co.
Roessler & Hasslacher Chemical Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.
Wing & Evans, Inc.
Wolf, Jacques & Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Allis-Chalmers Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electrical Heating Devices.
Crocker-Wheeler Co.
General Electric Co.

Electrical Supplies.
Johns-Manville Co., H. W.

Electric Driven Pumps.
Dean Bros. Steam Pump Works.
General Electric Co.

Electric Fans.
Allis-Chalmers Co.
Crocker-Wheeler Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Crocker-Wheeler Co.
General Electric Co.

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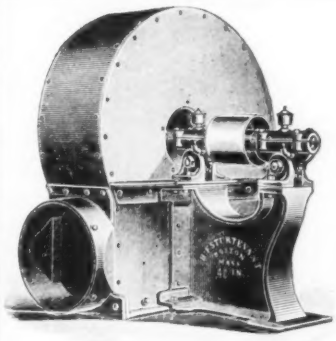


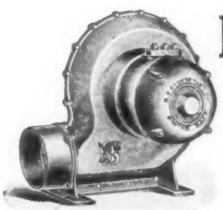
Sturtevant

Stock Fans Are Standardized

Duplicate parts always on hand for immediate shipment. Nearly every fan use for conveying, ventilating, exhausting, or drying, can be met by one of our stock fans always ready for immediate shipment from our works at Hyde Park, Mass., or from our Philadelphia and Chicago storerooms.

Many of the best mills in the country are equipped with Sturtevant Fans installed by our engineers to meet individual conditions. Our recommendations are not based on guess work, but on the results of years of experience in meeting similiar problems. Your requirements can probably be met by one of our stock fans. If not we build apparatus to order.

Correspondence invited.



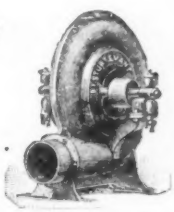
B. F. Sturtevant Company
Boston, Mass.

General Office and Works, Hyde Park, Mass.

Builders of

Fans, Fan Systems and Allied Products

759



Electric Lighting.
Allis-Chalmers Co.
Cosmos Electric Co. (arc).
Crocker-Wheeler Co.
General Electric Co.
Holophane Company.
Johns-Manville Co., H. W.
Nernst Lamp Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Crocker-Wheeler Co.
Diehl Manufacturing Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electrolyser.
National Laundry Machinery Co.

Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Otis Elevator Co.
Salem Elevator Works.

Employees' Time Recorders.
Pettes & Randall Co.

Engines.
—See Steam and Oil Engines.

Engine Repairs.
Fishkill Landing Machine Co.

Engineers (Textile).
Buhlmann, A. W.

Exhaust Heads.
Burt Mfg. Co.
Sturtevant, B. F., Co.
Power Specialty Co.

Fans—Exhaust and Ventilating.
—See Ventilating Apparatus.

Feed Water Heaters.
Exeter Machine Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

Feed Water Purifiers.
American Water Softener Co.
Exeter Machine Works.
Keystone Chemical Mfg. Co.
Scaife, W. B., & Sons.

Feeds.
—See Automatic Feeds.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.
Hunt, Rodney, Machine Co.

Fender Boards.
Case Bros.

Filters.
American Water Softener Co.
Burt Mfg. Co.
Hungerford & Terry.
Keystone Chemical Mfg. Co.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Finishing Compounds.
—See Sizings.

Finishing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.
Johns-Manville Co., H. W.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combe-Barbour, Ltd.

Fluted Rolls.
Hood, R. H., Company.
Howard & Bullough American Mach. Co.

Leigh & Butler.
Riley, C. E., Company.
Speed & Stephenson.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Calder Machine Works.
Hall, F. A. & P.
Hopkins Machine Works.
Howard & Bullough American Mach. Co.
Leigh & Butler.
Speed & Stephenson.
Textile Machinery Co.

Forges.
Sturtevant, B. F., Co.

Friction Clutches.
—See Clutches.

Friction Cones.
Evans Friction Cone Co.

Fuel.
Darrow-Mann Co.

Fuel Economizers.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods
Hopkins Machine Works.
Hunt, Rodney, Mach. Co.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.

Furnace Bars.
Mellor Furnace Engineering Co.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Hunter, James, Machine Co.
Leigh & Butler.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gaskets (Superheated Steam).
Johns-Manville Co., H. W.
Power Specialty Co.

Gauges.
Walworth Manufacturing Co.

Gears.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrel Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
General Electric Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
Borne, Scrymser Co.
N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.

Harness Twine.
Moore, C., & Co.

Harness and Frames.
Garland Mfg. Co.
Gowdey, J. A., Reed and Harness Mfg. Co.
Steel Heddle Mfg. Co.

Heating.
—See Ventilating Apparatus.

Heddles.
American Supply Co.
Howard Bros. Mfg. Co.
Richards, Atkinson & Haserick.
Steel Heddle Mfg. Co.

Hoisting Apparatus.
Economy Engineering Co.
Hunt, Rodney, Machine Co.
Yale & Towne Mfg. Co.

Hosiery Boards.
Pearson, J. T.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Company.
Meyercord Co.

Humidifying Apparatus.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Fries, John W.
Parks, G. M., Co.
Thomas & Smith, Inc.

Humidity Gauge.
Johns-Manville Co., H. W.

Hydraulic Rams.
Power Specialty Co.
Walworth Mfg. Co.

Hydraulic Testing Machines.
Knapp, C. H.

Hydro Extractors.
American Laundry Machinery Co.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Dienelt & Eisenhardt, Inc.
Riley, C. E., Co.
Richards, Atkinson & Haserick.
Schaum & Uhlinger.
Schwartz, L. H. A., & Co.
Tolhurst Machine Works.

Hygrodeik.
Johns-Manville Co., H. W.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits).
Home Insurance Co.

Ironing Machines for Knit Goods.
American Laundry Machinery Co.
Consolidated H. S. & L. M. Co.

Jacquards.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, George W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines, Crochet, Etc.
American Laundry Machinery Mfg Co.
Consolidated H. S. & L. M. Co.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Spindler, E. O.
Union Special Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Acme Knitting Machine & Needle Co.
Ainslie Knitting Machine Co
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Eppiers, John, Mach. Works.
Excelsior Knitting Machine Mfg. Co.
General Machine Works.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Hirsch, Louis.
Jenckes Knitting Mach. Co.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Lindley, Geo. W.
Ludwig, H. Alban.
Mayo, Geo. D., Knitting Machine Co.
National Automatic Knitter Co.
New Branson Knitting Machine Co.
Nye & Tredick Co.
Paxton & O'Neill.
Richter, Wolfgang.
Rieffel, August.
Scott & Williams.
Spindler, E. O.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros. Co.
Walther, Otto.
Wilcomb Machine Co.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Acme Knitting Machine & Needle Co.
Breedon's, Wm., Sons.

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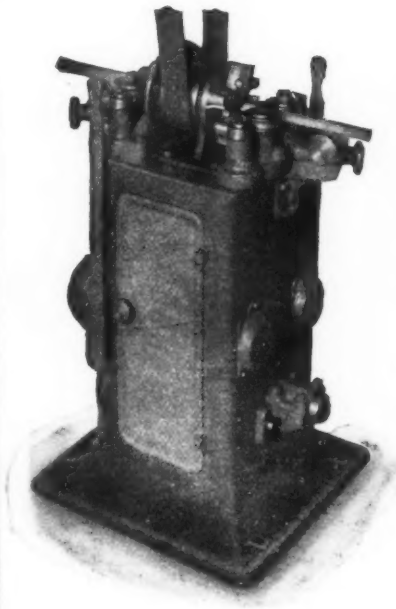

$ THE MONEY-MAKER $

Adjustable Rod and Dowel Machine

Enables You to Turn Your Own Lease Rods, Skewers, Scavenger Rolls, Dowels, Rolls and Poles for Stock Dye Tubs, Curtains, etc.

One cutter head turns any variation in sizes between ¼ and 2" diameter.
Machines built to turn as large as 6' diameter.
Turns hard or soft woods equally well.
No choking of head. Nice smooth work.
Double the capacity of any solid chuck machine.
Sold direct to users under a demonstration plan that guarantees the satisfaction of every purchaser.
Send a list of sizes you wish to turn and get our **guaranteed proposition with references to large textile mills using them**

W. S. HAWKER MANUFACTURING CO.
DAYTON, O.

"AMERICAN"

A VALUABLE TEXT BOOK ON ROPE DRIVING FREE

Chapters on the advantages of Manila Rope for the transmission of power, on systems of arranging drives, data on sheaves, directions for splicing, formula and data for calculating drives, practical notes on the care of ropes, and a detailed description of the many superior qualities of

"AMERICAN" TRANSMISSION ROPE

Manufactured by
American Manufacturing Co.
65 Wall St., New York City

We make a specialty of Manila, Sisal and Jute Bale Rope.

Write for Samples

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Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Currier Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Keystone Latch Needle Co.
Lamb Knitting Machine Mfg. Co.
M. Q. S. Mfg. Company.
Rieffel, August.
Spindler, E. O.
Wardwell Needle Co.

Labeling Machines.
Rose Machine Co., Inc.
Willcox Mfg. Co.

Label Wire Stitchers.
Beck, Chas., Co.
Shoemaker, J. L., & Co.

Lace Machines.
Spindler, E. O.

Lags for Pickers (see Picker Teeth).
Szepesi & Farr.

Lamps, Electric.
Buckeye Electric Co.
Cooper Hewitt Electric Co.
Cosmos Electric Co. (arc).
General Electric Co.
Johns-Manville Co., H. W.
Nernst Lamp Co.
Westinghouse Electric & Mfg. Co.
Westinghouse Lamp Co.

Light Reflectors.
Holophane Company.
Wheeler Reflector Co.

Liquid Chlorine.
Electro Bleaching Gas Co.

Loom Pickers.
Garland Mfg. Co.

Loom Reeds.
Emmons Loom Harness Co.
Gowdey, J. A., Reed & Harness Mfg. Co.

Looms.
Buhlmann, A. W.
Crompton & Knowles Loom Works.
Draper Company.
Hartmann, Richard.
Kilburn, Lincoln & Co.
Leigh & Butler.
Lowell Machine Shop.
Mason Machine Works.
Richards, Atkinson & Haserick.
Stafford Co., The.
Whitin Machine Works.

Loopers.
Beattie Manufacturing Co.
Hepworth, John, W., & Co.
Leighton Machine Co.

Lubricants.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.

Lubricators.
Walworth Mfg. Co.

Lumpers.
Gerry, George, & Son.
Schofield, William, Co.

Machinery Dealers.
Schofield, Geo. L.
Speed & Stephenson.
Taylor, James.

Machinists.
Calder Machine Works.

Machinists' Tools.
Whiton, The D. E., Co.

Magnesia Products.
Johns-Manville Co., H. W.

Mails.
Walder, J.

Marking Pots.
Bradley, A. J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliot & Hall.

Mechanical Draft.
Sturtevant, B. F., Co.

Mechanical Draughtsmen.
Sturtevant, B. F., Co.

Mechanical Engineers.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
Murphy Iron Works.

Mercerizers.
Globe Dye Works Co.
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Lorimer, Wm. H., Sons Co.
Standard Bleachery Co.

Mercerizing Machinery.
Buhlmann, A. W.
Butterworth, H. W., & Sons.
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Schwartz, L. H. A. & Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.

Metallic Fire-Proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
—See Architects and Mill Engineers.

Mill Builders and Engineers.
Ferguson, John W.
Main, Chas. T.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Buckley's Benjamin, Sons.
Easton & Burnham Mch. Co.
Emmons Loom Harness Co.
Eureka Fire Hose Co.
Exeter Machine Works.
Garland Mfg. Co.
Lane, W. T., & Bro.
Leigh & Butler.
N. Y. & N. J. Lubricant Co.
Pairpoint Corporation.
Philadelphia Drying Machinery Co.
Riley, C. E., Company.
Richards, Atkinson & Haserick.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.
Speed & Stephenson.
Thurston, A. G., & Son.
Vandegrift, Elias T.
Walworth Manufacturing Co.

Motors.
—See Electric Motors.

Muriatic Acid.
Niagara Alkali Co.

Napping Machinery.
Birch Bros., Somerville Machine Wks.
Buhlmann, A. W.
Curtis & Marble Machine Co.
Leigh & Butler.
Schwartz, L. H. A., & Co.

Netting Machines.
Spindler, E. O.

Noils (Silk).
Ryle, Wm., & Co.

Non-fluid Oils.
N. Y. & N. J. Lubricant Co.

Numbering Machines.
Beck, Chas., Co.

Oilless Bearings.
Arguto Oilless Bearing Co.

Oil Cups.
Walworth Manufacturing Co.

Oils.
Borne, Scrymser Co.
Harding & Fancourt, Inc.
N. Y. & N. J. Lubricant Co.

Oil Stencil and Press Board Paper.
Bradley, A. J.

Oil Filter Manufacturers.
Burt Mfg. Co.

Oiling Systems.
Burt Mfg. Co.

Overseaming Machines.
Merrow Machine Co.
Singer Sewing Machine Co.
Spindler, E. O.

Packings (Metallic).
Power Specialty Co.

Paints.
Briggs, John, & Company.
Brown, Chas. H., Paint Co.
Castle Water Paint Co.
U. S. Gutta Percha Paint Co.
Wadsworth, Howland & Co.

Paints (Wood Preserving).
Carbolineum Wood Preserving Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Beck, Chas., Co.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

Paper Cones.
Pairpoint Corporation.

Paper Tubes.
Pairpoint Corporation.

Pasting Machines.
Willcox Mfg. Co.

Patent Solicitors.
Crosby & Gregory.
Howson & Howson.

Penstocks.
Hunt, Rodney, Machine Co.

Perforated Metals.
Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Picker Teeth.
Szepesi & Farr.

Pipes and Fittings.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.

Pipe Loading Machines.
Jordan Machine Co.

Plush Machinery.
Buhlmann, A. W.

Pneumatic Conveying.
—See Ventilating.

Portable Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.

Power Transmission Machinery.
Allis-Chalmers Co.
Almond, T. W., Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Cresson, Geo. V., Co.
Evans, G. Frank.
Farrel Foundry and Machine Co.
Hunt, Rodney, Machine Co.
Hunter, James, Machine Co.
Kilburn, Lincoln & Co.
Leffel, James, & Co.
Link-Belt Co.
Morse Chain Co.
Philadelphia Drying Machinery Co.
Reeves Pulley Co.
Royersford Foundry & Machine Co.
Saginaw Manufacturing Co.
Schofield, William & Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Threlfall, Wm., Co.
Tolhurst Machine Works.

Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh & Butler.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Pettee Company.

Preservatives.
Carbolineum Wood Preserving Co.

Presses.
American Laundry Machinery Co.
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Consolidated H. S. & L. M. Co.
Curtis & Marble Machine Co.
Hart, Charles.
Phila. Drying Machinery Co.
Spence & Rideout.
Textile Finishing Machinery Co.
U. S. Hoffman Co.
Woonsocket Machine & Press Co.

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Press Boards.
Beck, Chas., Co.
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Press Papers.
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Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Pressure Regulators.
Walworth Mfg. Co.

Pulleys.
——See Power Transmission Machinery.

Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.
Hunt, Rodney, Machine Co.
Lawrence Pump & Engine Co.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Pump Governors.
Dean Bros. Steam Pump Works.
Walworth Mfg. Co.

Purifying & Filtration Plants.
American Water Softener Co.
Hungerford & Terry.
Keystone Chemical Mfg. Co.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Quillers.
Foster Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Raveling Machines.
Arguto Oilless Bearing Co.

Raw Hide Gears.
New Process Raw Hide Co.

Reed and Harness Manufacturers.
American Supply Co.
Emmons Loom Harness Co.
Gowdey, J. A., Reed and Harness Mfg. Co.
Nuttall, George.

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Walworth Mfg. Co.

Regulators (Pressure).
Walworth Mfg. Co.

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N. Y. Revolving Portable Elevator Co.

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Cheney Bros.

Ring Travelers.
Shaw, Victor, Ring Traveler Co.
U. S. Ring Traveler Co.

Rod and Dowel Machinery.
Hawker, W. S., Mfg. Co.

Rollers (Rubber Covered).
Boston Belting Co.

Roofing.
Barrett Mfg. Co.
Johns-Manville Co., H. W.

Roller Bearings.
Royersford Foundry & Machine Co.,

Roller Logs.
Hartwell, G. E.

Rope Dressing and Preservative.
Cling-Surface Co.

Rope Transmission.
American Mfg. Co.
Cresson, Geo. V., Company.

Roving Cans.
Hill, James, Mfg. Co.
Standard Fibre Co.

Roving Reels.
Scott, Henry L., & Co.

Scallop Machines.
Merrow Machine Co.

Schappe (French Spun).
Suter, Alfred.

Schools.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Secondhand Machinery.
——See Mchy. Dealers, also Classified Ads.

Separators (Yarn).
Draper Co., The.
Howard & Bullough American Mach. Co.

Sewing Machines and Supplies.
Arlington Mch. Wks.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Rose Machine Co., Inc.
Somerville Mach. Wks. (Albert Birch, prop.)
Speed & Stephenson.
Spindler, E. O.
Textile Finishing Machinery Co.
Union Special Machine Co.
Willcox & Gibbs.

Shafting, Hangers, Etc.
——See Power Transmission Machinery.

Shearing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Pressings.
M. Q. S. Mfg. Company.

Sheet Metal Work.
M. Q. S. Mfg. Company.
Scaife, W. B., & Sons.

Shell Rolls.
Thurston, A. G., & Son.

Shuttles.
——See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Arlington Mch. Wks.
Buhlmann, A. W.
Butterworth, H. W., Sons Co.
Crompton & Knowles Loom Works.
Hartmann, Richard.
Leigh & Butler.
Lowell Machine Shop.
Mason Machine Works.
Richards, Atkinson & Haserick.
Schwartz, L. H. A., & Co.
Suter, Alfred.
Textile Finishing Machinery Co.

Silk Mill Supplies.
Hall, I. A., & Co.

Silk Rolls.
Fawcett, Hughes.

Singe Plates.
Butterworth, H. W., Sons Co.
Taunton-New Bedford Copper Co.
Textile Finishing Machinery Co.

Singeing Machines.
Birch Bros., Somerville Mach. Wks.
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Societe Anonyme Electro-Textile.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.

Sizing, Starch and Gums.
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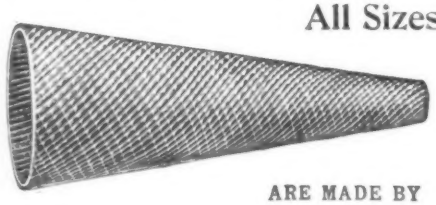

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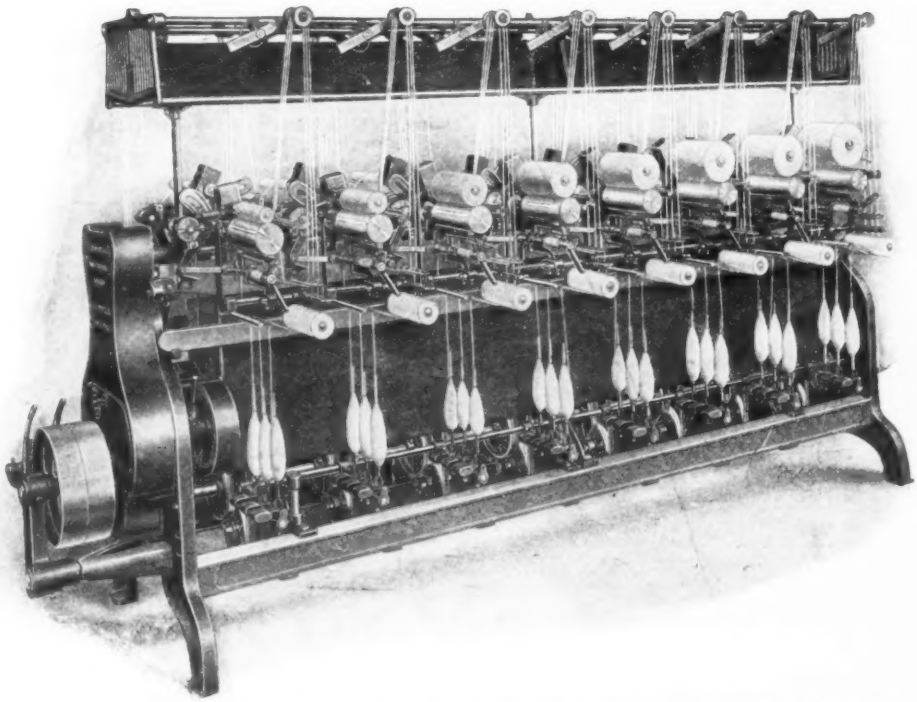

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LADY WANTED IN UNDERWEAR MILL.

Wanted a lady in underwear mill, located in a city of Illinois of 25,000 inhabitants, who manufacture ladies' and gentlemen's underwear. One who understands and can teach operators on seaming, covering, finishing, etc., on the different machines. Good wages to the right party. I. P. C., Textile World Record, Boston, Mass.

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On Narrow Fabrics and Tape Looms. Good position for right man. N. F. T., Textile World Reeord, Boston, Mass.

SILK MILL SUPERINTENDENT WANTED

An experienced superintendent to take charge of a silk mill. One who is acquainted with the manufacture of umbrella silk preferred. Address "Silk Mill," Textile World Record, Boston, Mass.

KNITTING MILL MANAGER WANTED.

An experienced man with best references, one who could invest $1,000 or more preferred. Address, "Knitting Mill," care Textile World Record, Boston, Mass.

Man Wanted to Go to the Far East.

A man capable of running Spring Needle Machines on fleeced lined and latch needle machines on Sweaters and Underwear, also Nappers, Winders and Sewing Machines, who is willing to go to the Far East. Must be a man of good habits and of naturally good temper. "East," Textile World Record, Boston, Mass.

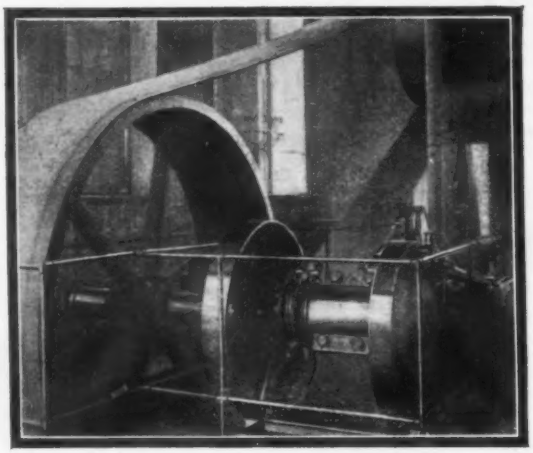
Fancy Loom Fixer Wanted.

Not over twenty-five years old.

Young man with good general knowledge of designing and weaving, able to fix fancy looms. Permanent attractive position for man of good habits, industry and first-class ability. Mills Woven Cartridge Belt Co., 70 Webster St., Worcester, Mass.

MILL MANAGER WANTED

A Company of high financial standing, engaged in the manufacture of Woolen Knit Goods in the Middle West, desires to communicate with an experienced mill manager capable of taking the place of one of its retiring officers and the general management of the business, which is an old established one and very successful. Would prefer a former mill owner with means sufficient to take enough stock to make interests mutual. Best of references asked and given. Want only experienced and successful man of good standing. An exceptional opportunity for the right one. Address "Mill Manager," Textile World Record, Boston, Mass.



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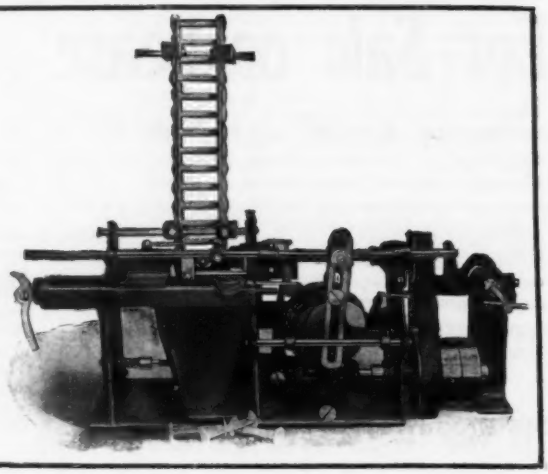


Situations Wanted.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, Boston or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, gives special attention to this department. He would be pleased to hear from any of his friends who may be interested. Address Textile World Record, 144 Congress St., Boston, Mass.

WOOLEN SUPERINTENDENTS.

Supt. or Boss Weaver in woolen mill; worked on dress goods, wool and worsted cloakings, men's wear and piece dyed fancy goods, also satinets; familiar with the Crompton & Knowles looms; 45 years of age; good reference.
5107, Textile World Record, Boston, Mass.

Supt. or Asst. Supt. in woolen mill; worked on unions, satinets, woolens, worsteds and flannels; familiar with worsted yarn machinery; weaving, finishing, woolen carding and spinning machinery; 30 years of age, married; will not so South; good reference.
5093, Textile World Record, Boston, Mass.

Agent, superintendent or designer in woolen mill; worked on anything in the wool, worsted and cotton line from 16c. per yard to $4.25; familiar with almost any makes of machines; 40 years of age, married; good reference; will not go to Canada.
5094, Textile World Record, Boston, Mass.

Agent or Superintendent of a woolen mill; worked on all grades of woolens, worsteds, men's wear, face goods, overcoatings and cloakings; familiar with all kinds of machinery, both English and American; will not go to Pa., N. Y., N. J., West, South or Canada; 40 years of age, married.
4860, Textile World Record, Boston, Mass.

Superintendent or designer in woolen mill; worked on woolens, worsteds, cassimeres, dress goods, blankets, traveling rugs, shawls, military cloth, unions, etc.; familiar with old Crompton machines, also German makes of machinery; 31 years of age, married; will only go West or South; good reference.
5118, Textile World Record, Boston, Mass.

Agent or Superintendent, superintendent or all combined in a woolen mill; worked on worsteds, all kinds from the finest to the very lowest, men's wear, ladies' wear of all kinds, also imitation furs; understands every department in a woolen mill thoroughly; 41 years of age, widower; will not go South or Canada; good reference.
4884, Textile World Record, Boston, Mass.

COTTON SUPERINTENDENTS.

Assistant Superintendent or superintendent in cotton mill, or boss dresser, weaver or cloth room overseer; worked on sheetings, shirtings, flannelettes, cottonades, ginghams, denims, Turkish towels, blankets, bags, tickings and awnings; familiar with the Howard & Bullough warpers and slashers, English and American plain looms, circular and drop boxes, dobbies, Entwistle and Draper warpers; 44 years of age, married; will not go to Me., Vt., Pa., N. J., South or Canada; good reference.
5188, Textile World Record, Boston, Mass.

Superintendent of a cotton mill or large overseer position; worked on cotton yarns, combed and carded from 5s to 120s, high and low twist in cones, tubes, warps, jack spools, etc.; familiar with all makes of machinery; 35 years of age, married; will not go to Canada; good reference.
5276, Textile World Record, Boston, Mass.

Cotton Mill Superintendent; worked on lenos, corduroys, fancy shirtings, sheetings, tubings, crinkled seersuckers, grain bags, sateens and twills; familiar with the Saco, Pettee, Mason, Whiting, Dobson, Barlow, Hetherington, Asa Lees, Platt and Draper makes of machinery; 29 years of age; good reference.
5177, Textile World Record, Boston, Mass.

Superintendent, styler or head designer in cotton or woolen mill; worked on cotton warp, all wool dress goods, plain and fancies, men's wear, serges and cheviots; familiar with plain, dobby and jacquard looms, also English, Crompton & Knowles looms; 33 years of age, married; will not go to N. J., West, South or Canada; good reference.
5113, Textile World Record, Boston, Mass.

Supt. of small cotton mill or asst. supt. or boss weaver in a large mill; worked on all classes of goods; has generally done own designing; familiar with the Whitin, Lowell, Mason, Colvin & Draper looms; Crompton drop box and dobby heads; 50 years of age, married; will not go to Pa., West or Canada; good reference.
5218, Textile World Record, Boston, Mass.

WOOLEN DESIGNERS.

Designer or superintendent and designer in woolen mill; worked on fancy worsteds and woolens; 43 years of age, married; good reference.
5254, Textile World Record, Boston, Mass.

Designer in small woolen mill; worked on fancy worsteds and woolens; familiar with the Crompton & Knowles and Crompton looms; 25 years of age, married; will not go to Pa., N. J., West, South or Canada; good reference.
5250, Textile World Record, Boston, Mass.

Designer, assistant superintendent or superintendent in woolen mill; worked on piece dye worsteds, skein dye worsteds, cotton worsteds, cross dyes, woolens, cassimeres, fancy goods and novelties; familiar with all the latest makes of woolen and worsted machines; 26 years of age; prefers New England; good reference.
5244, Textile World Record, Boston, Mass.

Designer, superintendent or both, assistant superintendent in woolen mill; worked on all kinds of men's and women's wear from the cheapest to the most expensive, piece dyes, fancy resist, and everything from 7 1/2 to 8 oz. to steamer rugs that weigh 36 oz. per yd.; familiar with all kinds of machinery; 30 years of age, married; will not go West, South or Canada; good reference.
5270, Textile World Record, Boston, Mass.

Superintendent or Designer of woolen mill; worked on all grades of men's wear, cassimeres, overcoatings, coverts, suitings, dress goods, fancy worsteds, cotton worsteds and cheviots; familiar with American makes of woolen machinery; 38 years of age, married; good reference.
3076, Textile World Record, Boston, Mass.

Designer or assistant superintendent in woolen mill; worked on fine fancy worsteds, piece dyes, cotton and worsteds, wool and worsteds, rain cloths and shoe cloths; 35 years of age, married; good reference.
5259, Textile World Record, Boston, Mass.

Assistant Designer in woolen mill; worked on woolens and worsteds, also union goods; familiar with the Crompton & Knowles box looms, Whitin dobby looms, Hattersly (English) plain looms, also looms with jacquard and leno attachments; 26 years of age; will not go to Pa., West, South or Canada; good reference.
5269, Textile World Record, Boston, Mass.

Woolen Designer in small mill, or assistant designer in large mill; worked on overcoatings, suitings and dress goods; 30 years of age; will not go to Me., N. H., Pa., Vt., West or South; good reference.
5258, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Boss Knitter on spring needles; worked on balbriggan, fleece flat work and single fleece; familiar with the Gormley, Campbell & Clute and Tompkins machines; 36 years of age, married; good reference.
5273, Textile World Record, Boston, Mass.

Boss Knitter in underwear mill; worked on glove linings, rubber linings, buffalo cloth, astrachans, eiderdowns, etc.; also circular and flat rib knitting on underwear; familiar with the Campbell & Clute, Tompkins, Bros. circular, Crams, Tiffany & Sons, Chas. Cooper flat rib machines; 45 years of age, widower; will not go West or South; good reference.
5255, Textile World Record, Boston, Mass.

Superintendent of underwear or sweater mill, boss finisher, boss knitter and sewing machine fixer; worked on men's and children's heavy and light weight ribbed underwear, jerseys, bathing suits, sweaters, sweater coats, mufflers and toques; familiar with all makes of machinery; 35 years of age, married; good reference.
5272, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill; worked on cotton stock, yarn, shoddy rags, worsted yarns, worsted piece dyes, resists, silk effects, cross dyeing, etc.; familiar with the Klauder-Weldon and Rodney Hunt machines; 33 years of age, married; will not go West, South or Canada; good reference.
5243, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill; has worked on worsted and cotton yarns, pieces and tops, cotton warps, jute, wool, fancy mixtures, piece dyes of all kinds, overcoatings, beavers, thibets, ladies' broadcloths, billiard and flannels; familiar with Klauder & Weldon and slubbing machines; 47 years of age, married; good reference.
5245, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill or good second hand; worked on ladies' goods, men's wear, unions, raw stock and yarns; familiar with the Klauder-Weldon machine for yarn and slubbing; 27 years of age, married; will not go West, South or Canada; good reference.
5275, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill; worked on fancy worsteds, woolens, men's wear, flannels, blankets, robes, unions, cotton worsteds, both skein and piece dyes; familiar with all makes of dyeing machinery used in woolen or worsted mills; 36 years of age, married; good reference.
5263, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill; worked on all kinds of woolen goods; raw stocks—silk, cotton and wool; piece dyes—worsteds, silk mixes, union worsteds and woolens, cloakings, dress goods, men's wear and overcoatings; yarns—worsted and cotton yarns, also resist work; 44 years of age, married; will not go to Me., Pa., N. Y., N. J., West, South or Canada; good reference.
5251, Textile World Record, Boston, Mass.

Boss Dyer or finisher or both in woolen mill, or assistant superintendent of dyeing and finishing; worked on fancy and piece dyed woolen and worsted dress goods, broadcloths, meltons, kerseys, rain coatings, cotton worsteds, unions, all worsteds and men's wear; familiar with all makes of machinery used in the production of the above goods; 31 years of age, married; good reference.
5253, Textile World Record, Boston, Mass.

Overseer of dressing, spooling, twisting, reeling, skein winding, filling winding, etc., in woolen mill; worked on cotton worsteds, worsteds of all grades up to the finest yarn made, woolens, cheviots, thibets, plaid back 2 and 3 ply cloth, in fact everything; familiar with dressing, spooling, skein winding, reeling machinery, etc.; 29 years of age, married; good reference.
5264, Textile World Record, Boston, Mass.

Boss Weaver in cotton mill; worked on prints, flannelettes, ginghams, satin goods and many other kinds; familiar with the Mason, Draper, Lowell, Crompton & Knowles looms; 39 years of age, married; will not go to Conn., Pa., N. Y., N. J., West or South; good reference.
5261, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Boss Weaver in woolen mill; worked on fancy woolens and worsteds; familiar with Crompton & Knowles looms; 33 years of age; will not go West South or Canada.
4454, Textile World Record, Boston, Mass.

Boss Weaver in woolen mill; worked on dress goods, worsted and woolen men's wear; 50 years of age, married; good reference.
5247, Textile World Record, Boston, Mass.

Boss Weaver in woolen mill; would take burling and sewing or dressing or both in addition to weaving; worked on all kinds of plain and fancy woolen and worsted goods, for ladies' and men's wear; familiar with the Crompton & Knowles looms, both cam and fancy, Crompton Thayer looms and English Knowles looms; 35 years of age, married; good reference.
3251, Textile World Record, Boston, Mass.

Boss Weaver in woolen mill; worked on woolens and worsteds, men's and ladies' goods; familiar with the Crompton & Knowles looms; 50 years of age, married; will not go West, South or Canada; good reference.
5260, Textile World Record, Boston, Mass.

Second Hand in weave room in woolen mill, fixer, or overseer in small mill; worked on woolen and worsted dress goods and men's wear; familiar with Crompton & Knowles looms; 25 years of age, married; will not go to Canada; good reference.
5267, Textile World Record, Boston, Mass.

Second Hand in weave room, pattern weaver, warp starter and boss dresser in small woolen mill; worked on woolens and worsteds; familiar with the Knowles, Crompton & Knowles looms; 31 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
5246, Textile World Record, Boston, Mass.

Boss Carder or carder and spinner in woolen mill; worked on men's and women's wear and all kinds of knitting; familiar with all grades of machinery and all grades of stock; 40 years of age; good reference.
3302, Textile World Record, Boston, Mass.

Second Hand in card room in woolen mill; worked on shoddy, camel hair, mohair, cotton mixes and wool; familiar with the Cleveland cards and Davis & Furber; will not go to Me., Pa., N. J., West, South or Canada; 24 years of age; good reference.
5271, Textile World Record, Boston, Mass.

Second Hand in woolen card room; worked on broadcloths, dress goods and cassimeres; familiar with Davis & Furber and Cleveland makes of machinery; 26 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
5266, Textile World Record, Boston, Mass.

Overseer of Carding and Spinning or spinning in woolen mill or superintendent of yarn mill; worked on suitings, dress goods, kerseys, thibets, meltons, carriage cloths, blankets, broadcloths, hosiery and knit goods; familiar with all makes of machinery; 34 years of age, married; good reference.
3287, Textile World Record, Boston, Mass.

Boss Finisher in woolen mill; worked on all classes of woolen and worsted goods; familiar with all kinds of machinery; 50 years of age, married; will not go to Pa., N. J., South or Canada; prefers N. E.; good reference.
3396, Textile World Record, Boston, Mass.

Second Hand of Finishing or overseer in small woolen mill; worked on broadcloths, cloakings, cassimeres, union cloths, worsteds, kerseys and thibets; familiar with the Parks & Woolson shears and nappers, Gessner presses, Hunter fulling mills, some washers and Davis & Furber nappers; 34 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
5268, Textile World Record, Boston, Mass.

Second Hand in finishing department in woolen mill or boss job in small mill; worked on meltons, mohairs, kerseys, broadcloths and some worsteds; familiar with all kinds of machinery in the finishing department; 30 years of age; good reference.
5262, Textile World Record, Boston, Mass.

MISCELLANEOUS

Overseer of Finishing in Knitting Mill.

Position wanted by a first-class finisher who has worked on all classes of underwear, ladies', gent's and children's. Has been employed in large mills for a number of years and has good recommendations. Could take a position within one week of being engaged. Has had 20 years of experience. Address: Overseer, Textile World Record, Boston, Mass.

HEAD LOOM FIXER OR BOSS WEAVER

A thoroughly practical loom fixer, familiar with Jacquard Looms, seeks a position as head loom fixer or boss weaver. 18 years' experience, age 37, married. Address "D. H.," Textile World Record, Boston, Mass.

Superintendent of hosiery mill, boss dyer or second hand; worked on cotton, woolen and some silk goods, unions, hair cloths, etc.; 33 years of age, married; will not go South or to Canada; good reference.
5242, Textile World Record, Boston, Mass.

Sales Manager; position wanted by a lady, highly recommended and experienced in handling the product of a mill manufacturing hosiery and underwear; would also consider a position as manager of a knitting mill in addition to looking after the selling of the goods; 35 years of age, American, single; would be pleased to correspond with anyone interested.
5274, Textile World Record, Boston, Mass.

Head Loom Fixer or boss weaver in cotton mill; worked on upholstery goods, silk and cotton; plush and velvet; rugs, summer curtains, dress goods, etc.; familiar with all makes of machinery in his line; 37 years of age, married; good reference.
5249, Textile World Record, Boston, Mass.

Manager, superintendent, assistant superintendent, secretary and treasurer of underwear mill; worked on ladies' light weight ribbed underwear; familiar with the Scott & Williams knitting machines and Wheeler & Wilson, Merrow, Union Special and Singer sewing machines; 38 years of age, married; good reference.
5257, Textile World Record, Boston, Mass.

Boss Spinner in woolen mill; worked on men's suitings, cassimeres, kerseys, cheviots, carriage cloth, billiard cloth and other classes; familiar with the English & Bridesburg mules, Davis & Furber mules and jacks; 47 years of age, married; good reference.
5256, Textile World Record, Boston, Mass.

Boss Finisher in woolen mill; worked on linings, both cotton and worsted, cashmere, flannels, wool dress goods, mohair and alpaca linings and dress goods; familiar with singeing, crabbing, tenter frames, cans, padding machinery, plates, dampers, fulling machines, scouring and hydraulic presses; 30 years of age, married; good reference.
5265, Textile World Record, Boston, Mass.

Assistant Designer in cotton mill; worked on checks, stripes, lenos, jacquard goods, damasks, ottomans, bagdads and tapestry goods; familiar with the Livsley loom, Ward's dobby, single and double action, jacquard, piano card cutting machines, Parkington's lacing machine and repeating machines; 21 years of age; good reference.
5252, Textile World Record, Boston, Mass.

Superintendent of hosiery mill; worked on lisle, silk, wool and silk, and fancy full fashioned hosiery; familiar with full fashioned machines; has good reference.
5140, Textile World Record, Boston, Mass.

Cotton-Mill Apprentice to Superintendent

Mr. T. W. Mullen, Rosemary, N. C., who is now Superintendent of the Rosemary Manufacturing Company, writes to the I. C. S. as follows:

"When I started in the manufacturing business I knew absolutely nothing about machinery or any of the calculations connected with a cotton mill. I found your Complete Cotton Course taken in connection with the actual work in the mill of invaluable aid in enabling me to grasp the finer details of the work much more quickly than in any other way. Since taking out your Course I have advanced from an apprentice in a cotton mill to superintendent at an increase in salary of 833 per cent."

Would *you* be willing to make a small investment that would increase your salary 50, 100, 200, or 500 per cent?

If you are not satisfied with your present position mark and mail the attached coupon. Doing so will cost you only postage and will place you under absolutely no obligation.

Send this coupon NOW.

International Correspondence Schools
Box 882, SCRANTON, PA.

Please explain, without further obligation on my part, how I can qualify for the position, trade or profession before which I have marked X.

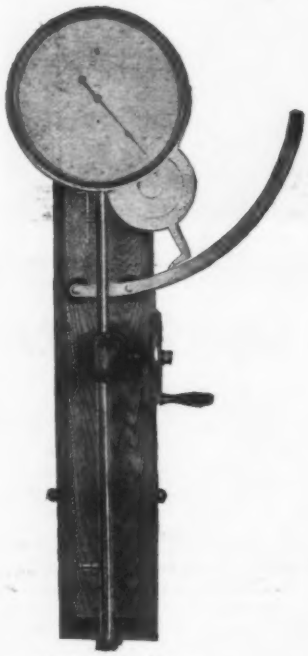
Cotton Manufacturing	Civil Service
Woolen Manufacturing	Architect { Spanish
Textile Designing	Chemist { French
Automobile Running	Languages { German
Mine Superintendent	Banking { Italian
Plumbing, Steam Fitt'g	Building Contractor
Concrete Construction	Architectural Draftsman
Civil Engineer	Industrial Designing
Stationary Engineer	Commercial Illustrating
Telephone Expert	Window Trimming
Mechanical Engineer	Show-Card Writing
Mechanical Draftsman	Advertising Man
Electrical Engineer	Stenographer
Electric Wireman	Bookkeeper

Name _____

Street and No. _____

City _____ *State* _____

Textile Testing Apparatus



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Strong, accurate and serviceable apparatus for yarn and cloth testing. In use by the Quartermasters Department of the U. S. A.

Prices Low and Quality Very High

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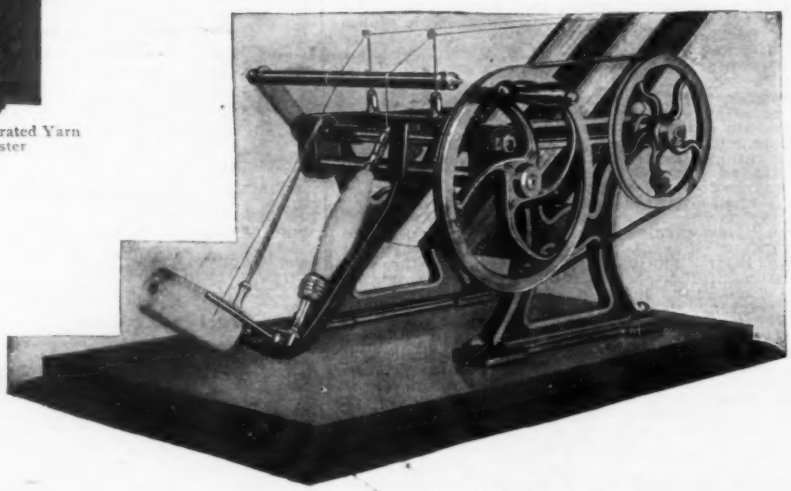
May we tell you more about them?



Yarn Examining Machine.

MANUFACTURED AND FOR SALE BY

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227 Eddy St., - - Providence, Rhode Island

MILL NEWS.

Pennsylvania, Philadelphia. The Fussner Hosiery Mills now at 2411-13 No. Howard St. where they are manufacturing children's and infants' cotton hosiery with 58 knitters, 33 ribbers and 9 loopers, will be removed to Amber & Seltzer Sts., Joseph Fussner, the proprietor of the plant, having recently purchased the building at the S. E. corner of those streets for $10,000.

Pennsylvania, Philadelphia. James F. Farrell & Co., operating 84 knitters and 8 ribbers on women's seamless and infants' and children's cotton hosiery at 220 Ashmead St., Germantown, have dissolved partnership. Mr. Farrell will continue the business, but under the name of the Scotland Mills Hosiery Co.

Pennsylvania, Philadelphia. Edward A. Blood, Edward Blood and John Blood are applying for a charter for John Blood & Bro., Incorporated. The company is now manufacturing underwear for women, which they dye, bleach and finish and sell through New York.

Pennsylvania, Philadelphia. The equipment of the plant until recently operated by John Scanlon & Sons at 3d and Huntingdon Sts. was sold out at public auction on March 28. The plant contained 396 looms, which they operated on cotton and woolen fabrics.

Pennsylvania, York. It is reported a syndicate is negotiating for the purchase of the three mills of the York Silk Mfg. Co.

Tennessee, Memphis. The Proctor & Gamble Co., manufacturers of soaps, Cincinnati, may build a cotton mill here at a cost of about $350,000. Plans were considered at a recent meeting of the company.

Texas, Austin. Governor Colquitt has vetoed what is known as the Townsend Bill appropriating $150,000 to build a cotton factory at the Rusk Penitentiary.

*Texas, Fort Stockton. There is nothing definite as yet in the project of J. H. Baverley to establish a rope mill at Fort Stockton.

*Texas, Wichita Falls. A mass meeting will be called soon for the consideration of the cotton mill proposition. H. A. Emerson and J. A. Kemp have been mentioned previously in connection with this project.

Virginia, Emporia. The old Ashby Cotton Mill has been sold to Alexander & Garsed of Charlotte, N. C. and the machinery has been removed.

Virginia, Norfolk. The Margolius Mfg. Co. has been incorporated with capital stock of $115,000 under the laws of Massachusetts. The incorporators are L. B. Way, president; Paul W. Kear, vice-president; L. P. Matthews, secretary and treasurer, all of Norfolk. It is understood the new corporation will manufacture bagging.

*Wisconsin, Appleton. There is nothing definite to report on the project of H. I. Norton of Marinette, and others, to organize a $100,000 company to develop water power at Davis Falls on the Pike River and establish a fiber plant.

Pennsylvania, Siegfried. Reports that the Atlas Hosiery Mills are shut down and for sale are incorrect.

Pennsylvania, Vinemont. It is reported that a Mr. Miller of Adamstown will establish a hosiery plant here. This probably refers to the location of a branch mill here by Miller Bros. of Adamstown, manufacturers of women's seamless cotton hosiery.

Rhode Island, Providence. The capital stock of the Vesta Knitting Mills has been increased from $200,000 to $350,000.

*Utah, Brigham. It is understood that John Anderson, proprietor of the Brigham City Knitting Factory, has removed the knitting department of his business to Salt Lake City, continuing the webbing department in Brigham.

Virginia, Suffolk. Local business men are reported to be planning the organization of a corporation to build a knitting mill. The capital proposed is $15,000. $10,000 has been subscribed.

Virginia, Williamsburg. Harry N. Phillips, one of the trustees of the bankrupt Williamsburg Knitting Mill Co., has returned here after a trip to the East in the interest of the sale of the plant. It is understood Mr. Phillips is in touch with a possible purchaser. The business men of Williamsburg have pledged $2,500 as a bonus to anyone who will buy and operate the mill.

Wisconsin, Luxembourg. The machinery of the Inland Knitting Works has been removed to Green Bay, where a factory building has been purchased. A new corporation will be formed to take over the business of which Peter Boucher and Joseph Lohst of Luxembourg, and Emil Barbaux of Green Bay, are the principal stockholders. The fact that they have moved from Luxembourg is due to the difficulty they have experienced in shipping from this point.

New York, Amsterdam. Loss estimated at $20,000 was caused by fire in the plant of Yund, Kennedy & Yund. The blaze was practically confined to the card room in No. 2 Mill, No. 1 Mill being in no way affected and has been in operation since the morning after the fire. Repairs are already being made to the building and the cards are being reclothed. They expect to resume operations in full within three or four weeks.

New York, Fort Plain. A fire in the engine room of No. 2 Mill of the Bailey Knitting Mills caused some damage. The plant is running as usual.

North Carolina, Hickory. A slight loss was caused by fire in the boiler room of the Elliot Knitting Mills. The operation of the plant was not interrupted as the boiler and engine were not damaged.

Pennsylvania, Bath. D. J. Odenwelder's knitting mill, containing 75 knitters operated on men's and children's seamless hosiery, was recently damaged by fire to the extent of $500.

Pennsylvania, Elizabethtown. The Auto Knitting Mills have been destroyed by fire with loss of about $5,000. Hosiery and underwear were manufactured.

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WILLIAM V. THRELFALL CO.

Complete Mill Equipment

MACHINERY FOR COTTON, WOOLEN AND WORSTED MANUFACTURERS
ALSO FOR
BLEACHERS, DYERS AND FINISHERS OF TEXTILE FABRICS
POWER AND TRANSMISSION MACHINERY

Marshall Building, Broad, Central and Doane Streets
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Textile Machinery

Makers of Rag, Wool, Hair and Finishing Pickers, Automatic Square and Cone Willows, "Schofield" Intermediate Feed for Cards, Rag and Extract Dusters, Waste Pullers, Worsted and Shoddy Reels, All Kinds of Spike and Slat Aprons.

Special Machinery Built. General Machinery Repairs.
Relagging Picker Cylinders a Specialty.

"Marathon"

Oak Tanned Belting Worsted Aprons

R. H. HOOD COMPANY

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New York

IMPORTER OF

Testing Apparatus
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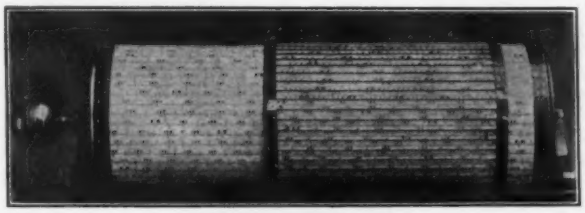


CALCULATING DISC.

MILL NEWS.

Fred Arpine has been appointed overseer of spinning at Plainfield Woolen Co., Central Village, Conn. He was formerly employed at the Franklin Mill, Franklin, N. H.

W. M. Doyle, overseer of weaving at the Atlantic Mill, Stottville, N. Y., has severed his connection with that company.

E. C. Gammage has been appointed superintendent and designer at the Earnsdale Worsted Co., Clinton, Mass. He comes from the Marston Worsted Co., Skowhegan, Me.

R. M. Broom, formerly overseer of carding at the Lockmore Mill, Yorkville, S. C., has been appointed overseer of carding at the Hanes Knitting Co., Winston, N. C.

H. W. Smith has accepted the position of overseer of weaving in the No. 3 Mill of the Dan River Mills, Danville, Va. He comes from Bessemer City, N. C.

R. H. Harris has accepted the position as overseer of carding and spinning at the Floyd Mills, Rome, Ga.

F. A. Briggs has accepted the position as overseer of the finishing department at the Highland Park Mill, Charlotte, N. C.

J. L. Scruggs, overseer of carding at the Gaffney Mfg. Co., Gaffney, S. C., has resigned to accept a similar position with the Republic Mills, Great Falls, S. C.

Pennsylvania, Philadelphia. Two of the five buildings containing the hair cloth plant of Gordon Bros., Inc., Pierce and Orthodox Sts., were recently destroyed by fire with loss estimated at $100,000. The plant contained 200 looms. The business has been conducted for the past year by W. P. Barrows, receiver.

Rhode Island, Woonsocket. A fire in card room of the River Spinning Co. caused damage estimated close to $1,000.

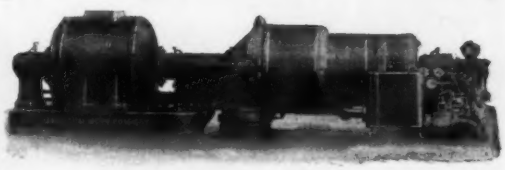
John J. Brown has accepted a position as overseer of spinning at the Union Mfg. Co., Peterboro, N. H. He comes from the Harmony Mills, Cohoes, N. Y.

Elmer D. McCarthy, superintendent of Geo. H. Tilton & Sons Hosiery Mill, Laconia, N. H., will leave about March 1 to take entire charge of the company's mills at Columbia, S. C., and Savannah, Ga. He is succeeded at Laconia by Gideon Perry, who has been his assistant for several years.

John Donahue, superintendent of the Fuld & Hatch Knitting Co., Albany, N. Y., has resigned to accept a similar position with the Victor Knitting Mill, Cohoes, N. Y. He is succeeded at the Fuld & Hatch Knitting Co. by Angus Garett.

James Dickey, superintendent of the Cascade Knitting Mill, Cohoes, N. Y., has severed his connection on account of ill health. He is succeeded by Howard McDowell.

Homer J. Conkey has been appointed assistant superintendent of the Fitwell Knitting Co., Cohoes, N. Y. He has been in the employ of this company for several years.



Many Textile Mills

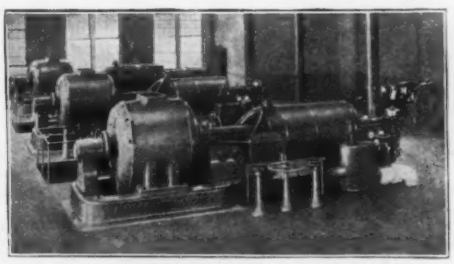
are replacing their older mechanical transmission systems by the installation of Steam Turbine Generating Units for electrical power, employing group or individual drive. In new mills of any considerable size, electrical power has become a characteristic feature.

Allis-Chalmers Steam Turbines

are taking a leading part in the electrification of textile mills. One of the largest mills in the country installed three 750 K.W. Steam Turbines, and soon followed with the installation of a fourth unit of 3250 K.W. A fifth unit, also of 3250 K.W. has since been ordered, and all on the strength of satisfaction received from the first turbines.

It is to your advantage to consult Allis-Chalmers Company when contemplating a change in your power plant equipment.

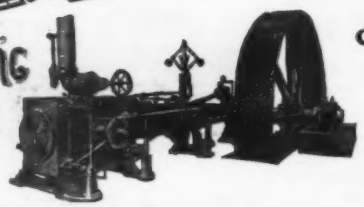
Write for Bulletins



Allis-Chalmers Steam Turbines installed in the Power Plant of a Textile Mill.

Allis-Chalmers Company
General Offices, Milwaukee, Wis.

THE IMPROVED FISHKILL CORLISS ENGINE
BUILT BY THE FISHKILL LANDING MACHINE CO.,
FISHKILL ON HUDSON N.Y.



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where high economy and
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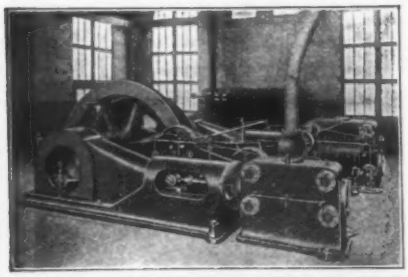
Cylinders & Valve Chests rebored in place.

General engine repairs.



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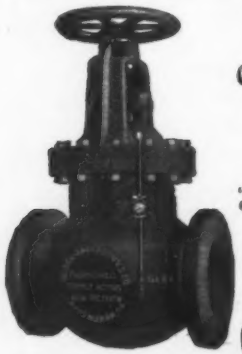
Heavy Duty Type
NOTED FOR
RELIABLE SERVICE,
LOW STEAM CONSUMPTION,
LOW FRICTION LOSSES and
SPEEDS HIGHER THAN OTHER CORLISS TYPES.
Designed and built by
PROVIDENCE ENGINEERING WORKS
Main Office & Works PROVIDENCE, R. I.

FOSTER SUPERHEATERS
Installed in any type of boiler without change in setting. Uniform superheat guaranteed.
Power Specialty Company,
BOSTON: 50 Congress Street NEW YORK: 111 Broadway.



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Cushioned Non-Return
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Triple Acting Valves
"Work Both Ways"

Protect your Power Station with "The Valves that are absolutely Guaranteed."

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maintain a uniform stage of water in standpipes, reservoirs or tanks.
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No overflow in case of fire pressure. Valves closed by water or electricity.
"FLOAT VALVES"
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Automatic Valves
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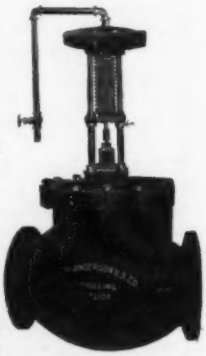

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We build them in accordance with the most advanced practice for all requirements. Consult with us on any pumping proposition.
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P. O. Box 70. Lawrence, Mass.
New York Office, 90 West St., Edmund S. Gibson, Manager.
Catalogue T. R. now ready.

MILL NEWS.

Colorado, Trinidad. The Chamber of Commerce is endeavoring to secure a woolen mill and is negotiating for equipment of the Topeka Woolen Mfg. Co., Topeka, Kansas.

Connecticut, Danbury. Edward VonGal has purchased the interests of J. G. Irving in the J. G. Irving Silk Works, Mr. VonGal now being the sole owner. The name of the business will be changed to the Imperial Silk Works. Mr. Irving retains the ownership of the building and will lease it to the new company.

Massachusetts, New Bedford. The stockholders of the new Quissett Mill have voted to increase the capital stock from $1,000,000 to $1,250,000. The stock has been subscribed for. The officers for the ensuing year are William M. Butler, president; Thomas F. Glennon, agent, and Edward H. Cook, treasurer.

Pennsylvania, Royersford. The McKibban Hosiery Co., Inc., has removed from Royersford to 404 Brown St., Philadelphia, and is operating 13 knitters and six ribbers on men's, women's and children's hosiery and fancy knit goods in cotton mercerized and silk. This concern also is a large buyer of other classes of knit goods. J. G. McKibban is president and manager and L. R. McKibban is treasurer.

*Tennessee, Chattanooga. The Chickamauga Knitting Mills have completed the addition mentioned recently and installed bleaching equipment.

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will effectively protect it from rot, dry rot and decay. It will double its life *at least*—and this means both underground and above ground.

It's efficiency has been proved by mill managers and others throughout the world since 1869.

It's easy to apply. Just cover the wood with an ordinary paint brush or dip it in the liquid.

It's inexpensive and does not add to the inflammability of the wood.

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187 FRANKLIN ST.....NEW YORK

The Arabol Manufacturing Co.

Offices: 100 William St., N Y. Factories: Brooklyn, N. Y.

Manufacturers, Importers and Exporters
of all Materials used in

Sizing, Finishing, Softening, Filling and Weighting of Yarns, Fabrics and Raw Stock

Sizing, Tallows, Soluble Grease, Soluble Oils, Gums, Glues, Gum Arabol, Lancashire Size, Waxes, Finishing Pastes, Soaps, Glycerine, Readymade Heavy Size, Sago and Tapioca Flours, Dextrines, China Clay, Soluble Blue, Bone Grease, Magnesium.

Special Compounds for Warps where stop motions are used.

Weighting compounds for colored and white warps.

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The Arabol best grades of cotton warp sizing compounds make the "finest weaving, and will hold the 'fly.'"

These compounds are based on the best practical experience and the best materials used in their manufacture.

ASHWORTH BROS.,

—MANUFACTURERS OF—

Card Clothing of Every Description

FALL RIVER, MASS.

SAVE
Their Cost
In Freight.

THE CHAFFEE PATENT CLOTH BOARD,
Made of paper and wood,
Needs no covers,
Will not split
or warp;
Not liable to break.
BOX SHOOKS and CLOTH BOARDS.

MFG. BY
CHAFFEE BROTHERS COMPANY,
OXFORD, MASS.

Clean
LIGHT
Strong

Thread and Silk **SPOOLS** of any description

made from one piece, up to 6" long and 3" dia.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

E. L. TEBBETS SPOOL COMPANY, Locke's Mills, Me.

BOSTON MASS. BRADFORD ENG.

RICHARDS, ATKINSON & HASERICK

IMPORTERS

TEXTILE MACHINERY
MILL SUPPLIES
EGYPTIAN COTTON

PHILADELPHIA OFFICE
"THE ARCADE"

ELIAS T. VANDEGRIFT

Successor to Ward & Vandegrift

In the Manufacturing of **SPINDLES,**

For Cotton, Woolen, Worsted, Silk and Flax Machinery. Manufacturers and Repairers. Also Flyers, Steel Caps, Bolsters, Steps, Tubes, Etc.

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ESTABLISHED 1885

John Epplers Machine Works, 629 Filbert St., Phila., Penna.

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Latest Improved Cop Machinery

of all kinds and

Upright Knitting Machinery for Millinery
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Established 1796

Special shaped carbon, black diamond, **pointed tools** for turning paper, rag, corn husk and cotton **calender rolls**, hard rubber, fibre, etc. Manufactured by

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Specialties made of Renecking, Refluting, Filing and Honing of all kinds of Rolls. Flyers Repaired and Fitted with any desired Style of Pressers, Spindles Straightened, Restopped and Retopped.

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The Bradley Steno'l Machine

Makes stencils in half a minute at reduced cost of 1-10 cent each. Write for catalogue and price list.

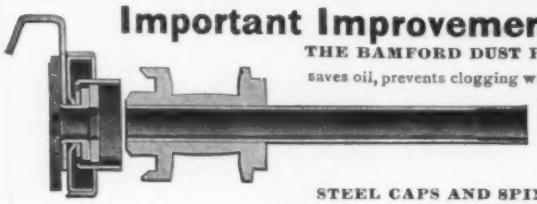
A. J. BRADLEY

In universal use by thousands of manufacturers and shippers.

Also manufacturers of **Oil** Stencil Board. Write for prices and samples.

101 Beekman St.
New York, U.S.A.

Important Improvement in Worsted Spinning.



THE BAMFORD DUST PROOF and SELF-LUBRICATING SPINDLE TUBE

saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Providence, R. I.

ALSO MFRS. OF

STEEL CAPS AND SPINDLES. **Caps, Flyers, Tubes, etc., Repaired.**

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Manufacturers of Reeds, Harness, Belting and General Mill Supplies

We make a specialty of Harness for American Warp Drawing-in Machine

OFFICE and STORE—135-137 Washington St., Providence, R.I. FACTORIES—Central Falls, R.I., and Fall River, Mass.

Spindles
Flyers
Repairs
of all kinds

F. A. & P. HALL,

DOUBLING and SPOOLING MACHINES

LAWRENCE, MASS.

Caps
Tubes
Spinning
Machinery
Parts

Steel Heddle Manufacturing Co.

2110-18 West Alleghany Ave., Philadelphia, Pa.

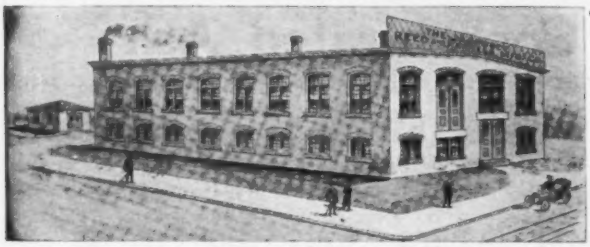
MANUFACTURERS OF

FLAT STEEL HEDDLES AND FRAMES,

for weaving **Soft** and **Hard** Silks, and all grades of **Cotton Goods.**

SPECIALTY: The **N. W. O. or Never Wear Out** Doup Heddle.

See the Loom Running at our Factory.



Established 1834 Incorporated 1900

The J. A. Gowdey Reed & Harness Mfg. Co.

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Loom, Leice and Hook Reeds
Metal Reeds for Silk Weaving
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All kinds of Warping Combs

Prompt Deliveries. Satisfaction Guaranteed
Large Stock of Raw Material Constantly on Hand

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Shaw's "Victor" Travelers

Manufactured by

VICTOR SHAW RING TRAVELER CO.

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U.S. RING TRAVELER CO.

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MAKERS OF ALL STANDARD

Spinning and Twisting Travelers
of every description. Wire Specialties of all kinds.

92 Westfield Street, - - PROVIDENCE, R. I.

AMOS M. BOWEN, Treas.

DIXON PATENT STIRRUP ADJUSTING SADDLE

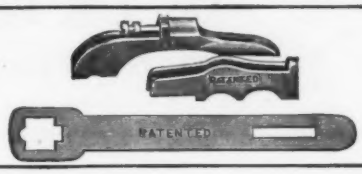
1,200,000 pairs now in use

Best Saddle for Top Rolls of Spinning Frames

Send for Samples

DIXON LUBRICATING SADDLE CO., Bristol, R. I.

Manufacturers of all kinds of Saddles, Stirrups and Levers



The Best Value

The largest pair of shoes is not always the best bargain. It's the pair of shoes that fits that gives you the most for your money.

So with

Wyandotte Textile Soda
and
Wyandotte Concentrated Ash

They are the products that fit the needs of the mill men. Why they do this, how they do it and where they do it is all answered in our new Textile Hints booklet. This booklet will be sent free to any mill man on request. Merely specify Textile Hints with the Yellow Cover.

THIS TRADE MARK CARD

IN EVERY PACKAGE.

The J. B. Ford Company, Sole Mfrs.
Wyandotte, Mich., U. S. A.

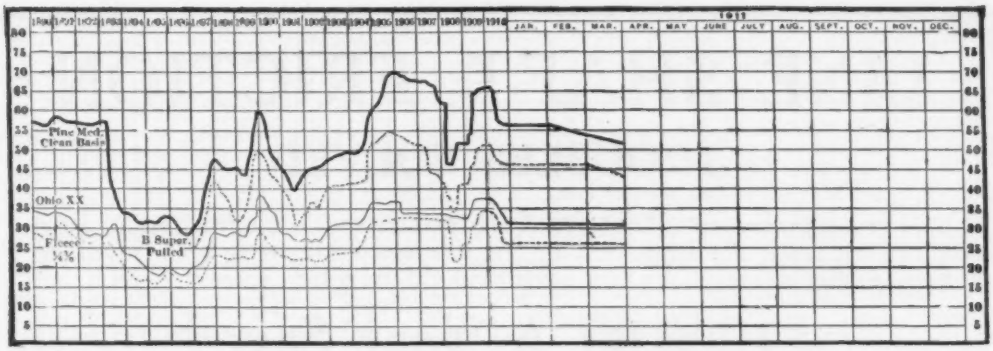


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

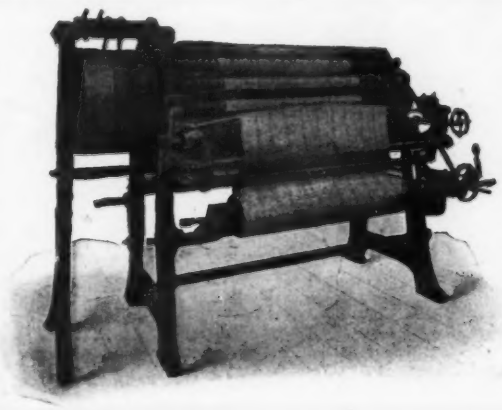
The Wool Market.

The market for wool is irregular and in the buyers' favor. Holders of wool have at last yielded to the pressure and sought to move stocks by cutting prices. A few of the larger and stronger firms have refused to fall in with the price-cutting movement, and as a result quotations vary widely for the same kind of wool. Aside from the reported purchase of a 2,000,000-pound lot of territory wool by a New England mill sales have been small in number and volume. The extra session of Congress and the reported intention of the House to send a bill radically revising schedule K to the Senate have created the general belief that this schedule will probably be changed in the near future. This is the most influential factor in the wool market today. Until the tariff question is settled business will remain unsettled. The one steadying influence is the strong position of wool in foreign markets. The recent decline here has brought American values to the exporting point. There is no possibility of free wool, but even free wool would have but a slight effect on prices in the United States. As far as values are concerned tariff revision has done all that it can do in the way of a reduction. Uncertainty is now the cause of depression in business, and that is causing dealers and manufacturers to wish for a speedy settlement of the wool tariff question at Washington.

MILL NEWS.

*New Jersey, Paterson. The Milan Silk Co. was incorporated a short time ago with capital stock of $50,000, to succeed Canova Bros., manufacturers of broad silks on 14 looms. Anthony Gross is president and Flavio Canova, treasurer, superintendent and buyer. The plant is located at 533 East 18th St. and is operated by electric power.

Massachusetts, Thorndike. Current reports of additions to the equipment of the Thorndike Co. refer to the installation of eight speeders and 80 deliveries of drawing which were installed some time ago. No spinning machinery has been put in recently or is even contemplated.



The SPIRAL Softener

the BEST BREAKER on the market, three times the production of any other breaker. Already over two hundred machines in successful use.

A. W. BUHLMANN
Textile Engineer
487 Broadway NEW YORK

LINE-SHAFT FRICTION

TROUBLES SOLVED

Probably the **greatest waste of power** can be charged to line-shaft friction. Which is why the **Kinkead Aligning and Leveling Apparatus** pays so great a profit on the original investment.

$1000.00 A Year Saved

This was the great saving recorded in one plant. In this particular case 2350 feet of shafting were lined up in 52 hours, working at night only, while previously the same alignment took two weeks and the plant had to be shut down.

The Kinkead Apparatus can be operated by two men who need not be experts; it allows them to adjust shafting with perfect accuracy, and if the driving end should be low it can quickly be graded in. *It is a Perfect Tool for Leveling Roving and Spinning Frames.* Let us give you a demonstration on your shafting *at our expense.* Just drop us a line today.

The Method of Using It, and a Few of Its Users.

American Woolen Co.
Amoskeag Mfg. Co.
Arkwright Mills
Atlantic Mills
American Linen Co
Bates Mfg. Co.
Berkshire Cotton Mfg. Co.
Burson Mfg. Co.
Butler Mills
Boston Duck Co.
Burgess Mills
Cheney Bros.
Conanicut Mills
Clark Thread Co.
Cleveland Worsted Mills Co.
Dwight Mfg. Co.
Davol Mills
Dundee Textile Co.
Edwards Mfg. Co.
Flint Mills
Fisher Mfg. Co.
Grant Yarn Co.

Gera Mills
Hamilton Mfg. Co.
Kerr Thread Mills
Kunhardt's Mills
Lawrence Duck Co.
Merchants Mfg. Co.
Norfolk & New Brunswick Hosiery Co.
Orswell Mills
Pacific Mills
Plymouth Cordage Co.
Puritan Mills
Paramount Knitting Co.
Riverside Woolen Mills
Sheriff Worsted Co.
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Write now for free demonstration.

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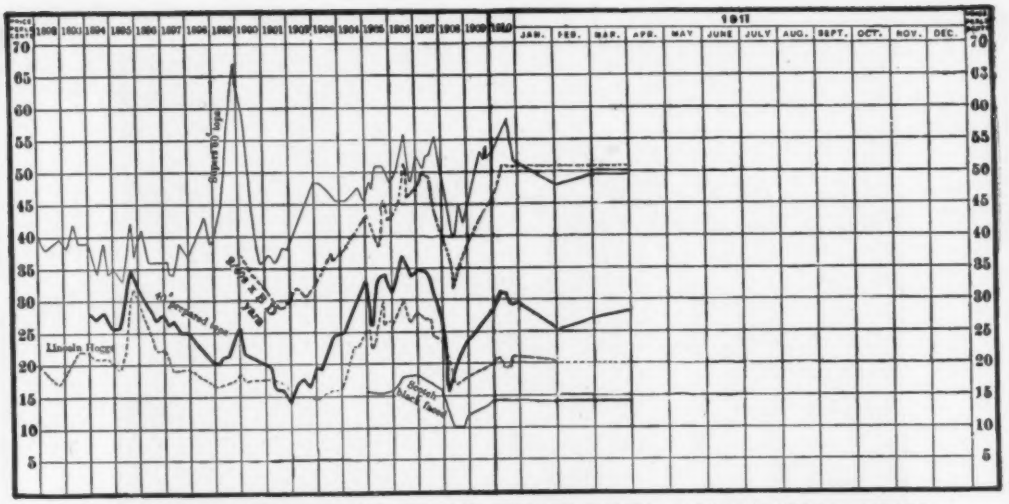


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS AND WORSTED YARN AT BRADFORD, ENGLAND.

The Bradford Market.

By our Special Correspondent.

Bradford, Eng., March 25, 1911.

More confidence is felt in the security of wool values and wools are more firmly held. There is still a very full consumption and merino tops are wanted more quickly than they can be got off the combs. Spinners, however, continue to dominate the situation, to hold down prices in tops and maintain high prices for yarn. In this spinners have some assistance from an improved demand for 2-60s and other high-count yarns which occupy the spindles without setting up an excessive demand for tops.

The position of crossbreds is not so snug, but is better than a month ago. New Zealand wool fit for prepared 40s is relatively scarce this season and the carding sorts are correspondingly abundant. The market in Colonial 40s wool is hardened by a steady demand from Russia for scoured matchings which are bought to suit the Russian tariff. The finer crossbreds are all well held.

No quotable change can be recorded in English wools, in which more business has been passing at the established rates.

Noils sell a little better and select lots of merino quality command fractionally better prices. Sixties stand at 28-33 cents and forties at 14-16 cents.

A little general support has been lent to this market by the reports of improvement in the French and German industries. America is regarded as being in a bad way and large operations on American account are not expected until after an indefinite number of months. All woolen and worsted looms are well engaged and manufacturers' stocks of fabrics are very light. The non-textile industries of this country are in full work, but the cotton spinning mills are again beginning short time to keep down the yarn production.

MILL NEWS.

Connecticut, Danielson. Fifty looms are being operated in the Danielson Cotton Co.'s plant on a special fabric known as cartridge cloth for the U. S. Government.

*Georgia, Griffin. Efforts are being made to put the mills of the Boyd-Mangham Mfg. Co., the Cherokee Mills and the Spalding Cotton Mills in operation again. The affairs of the Cherokee Mills have been found to be in good shape, and, while some mistakes have been made, it is believed this property will shortly be in operation. H. H. Bass has been elected temporary president and J. Henry Walker, temporary secretary. It will probably be necessary to reorganize the Cherokee Mills and a committee has been appointed to act for stockholders in negotiating with the creditors and arriving at some definite plan of reorganization. The Spalding Cotton Mills also will probably be reorganized.

Illinois, Chicago. The co-partnership heretofore existing between Gorchakoff & Siegal under the name of the Western Knitting Mills has been dissolved by mutual consent, Mr. Gorchakoff having bought out the interest of Mr. Siegal and continuing the business under the name of the Western Knitting Mills. Mr. Gorchakoff assumes all partnership indebtedness. As noted in another part of this issue, Mr. Siegal will establish a new knitting plant.

WORKERS not WEAKLINGS

is the call of today: the call of an age that skipped ***centuries*** in ***one.*** There is no place in the business world for the unfit or the laggards. That your workers may keep the twentieth century pace give them floods of sun and breeze. Don't be niggardly of air in your factories. When you curtail sunshine you stint in sinew.

Detroit-Fenestra
PATENTED

Solid Steel Windows

"Daylight for Factories"

multiplies the earning capacity of your men. It is a gilt-edged security—an investment in ***manhood*** that will yield compound interest.

The strength and lightness of Detroit-Fenestra are founded upon the remarkable Fenestra joint. Strength ***gained*** not lost at the point of intersection. Let our expert engineers solve your particular problem of lighting and ventilation.

Architects, engineers—everybody interested in construction should write to us for Catalogue X.

Detroit Steel Products Co., Mfrs.

Dept. 420 Detroit, Mich.

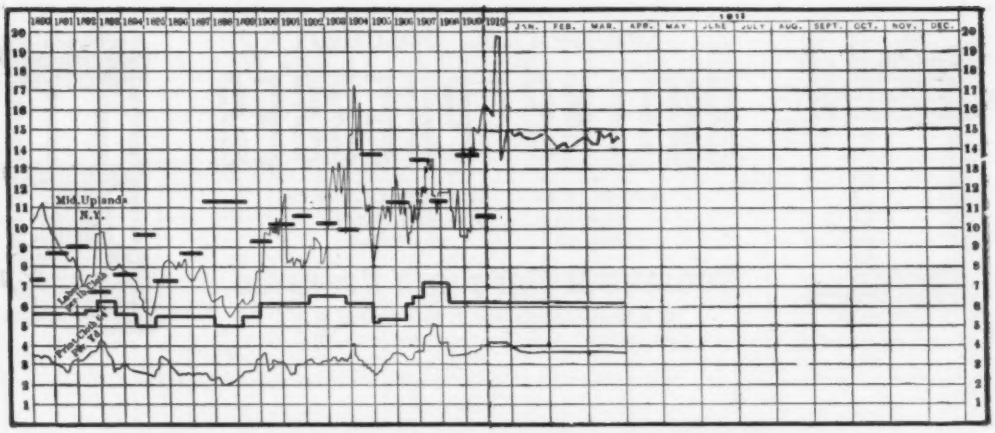


CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

The Cotton Market.

Prices have fluctuated within comparatively narrow limits since our last report, but the predicted advance has not materialized. There are many things that would warrant an advance, among them being the large takings by foreign spinners and the improved trade in Lancashire and on the continent. The depressed state of trade in the domestic goods market and the prospect of government regulation of cotton exchanges tend to restrain speculation for an advance. The movement into sight from September 1 to March 31 is reported by the "Chronicle" for a series of years, as follows:

1910-11	10,607,998
1909-10	9,105,715
1908-09	11,743,547
1907-08	9,891,604
1906-07	11,947,073
1905-06	9,331,726

The world's visible stock on March 31 is estimated by the same authority at 4,270,282 bales, as compared with 4,167,533 bales on the corresponding date at 1910, 4,892,437 bales in 1909, and 4,318,160 bales in 1908.

Massachusetts, Lowell. Work is progressing on the installation of knitting machinery in the plant of the Middlesex Co. and removing the old woolen machinery. Fine gauge seamless hosiery will be produced. F. J. Cartledge is superintendent.

MILL NEWS.

*Missouri, Kansas City. It is rumored that the J. Spencer Turner Co. is interested in the reorganization of the Kansas City Cotton Mills Co. The mill has been shut down since the death of Witten McDonald, and as has been noted previously, a $600,000 company is being organized and preparations made to put it in operation again.

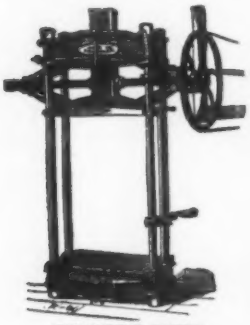
*New Hampshire, Manchester. Nothing can be learned regarding the identity of the hosiery concern that is communicating with the Manchester Board of Trade relative to removing to Manchester. Negotiations are still in progress.

New Jersey, Jersey City. The Tisbest Knitting Mills have been incorporated with capital stock of $200,000 by Charles F. Jones, Charles J. Ross, George Mack and H. O. Coughlan. The purpose is given as to operate knitting mills. The Corporation Trust Co. has been retained as attorney. The company will locate an office at 15 Exchange Place, Jersey City.

New Jersey, Paterson. A charter has been granted the Standard Textile Co. with authorized capital of $120,000. The incorporators are Nathan Garfinkle, Edwin B. Hindley and Robert Leggett. The principal office is at 11 Mill St.

New Jersey, Paterson. Space in F. J. Day & Co.'s mill has been leased by the Scandia Silk Co., now located at Main and Van Houten Sts., and they will move into the new quarters in about four weeks. It is said some additional equipment will be put in. Tubular ties are made on ribbon looms.

MANUFACTURERS OF
WEIMAR BROS. Cotton Mercerized Tapes
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES
Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



KNUCKLE JOINT

Boomer & Boschert

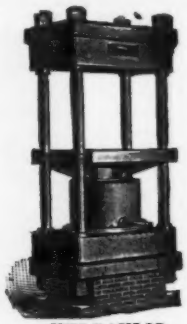
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C



HYDRAULIC.

Loom Harnesses

For Machine Drawing

Our HARNESSES are especially adapted for the American Warp Drawing Machine. The eyes stand square, are clean and are in perfect alignment. We furnish the harnesses equipped with spacers and ready for the machine if desired

GARLAND MFG. CO.
SACO, MAINE
Formerly Loom Picker Co. - - Biddeford, Maine

TRADE MARK

THE SEYDEL MFG. CO.

JERSEY CITY, N. J.

MANUFACTURERS OF

SIZOL

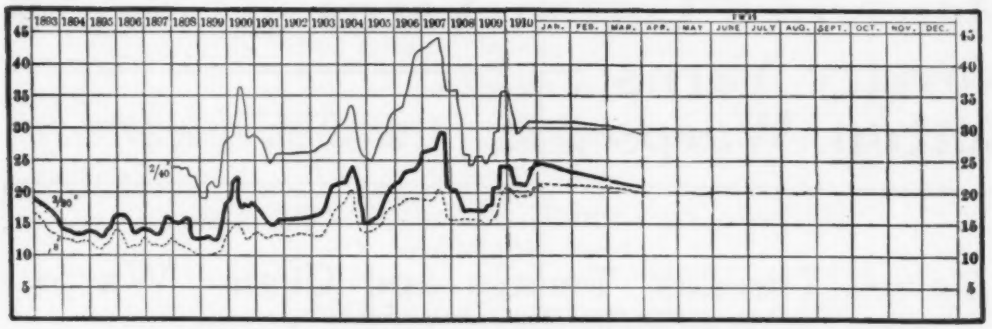
TRADE-MARK

SIZINGS AND FINISHINGS

SOAPS, SOFTENERS AND STARCHES FOR ALL TEXTILES

PHILADELPHIA BOSTON ATLANTA

Yarn Department.



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

In some respects the yarn market has shown a slight improvement. Prices have reached the point where spinners can no longer spin some of the numbers without serious loss. In consequence the supply has been considerably curtailed and a number of spinners on staple sizes, such as 2/20s and 2/30s warps, have closed their plants, and it is almost impossible to buy 2/20s warps, for illustration, at less than 23 cents from the spinner. A number of sales of stock yarn have been made at 22½ cents and 22¼ cents, but the strong position of the spinners' prices is stopping these methods of doing business. Two or three merchants have taken orders at these prices rather than see the business slip through their hands, and, in consequence, have been forced to take a loss in order to cover. This has not made them anxious to repeat the experience.

The demand for manufactured goods is still extremely slow, but one hopeful sign is that almost all orders received by the manufacturing trade are for immediate delivery and in many cases telegraph orders. This convinces the manufacturers that there is but a small stock ahead and the market, while dull, is in an extremely healthy condition. There is some apprehension, however, as to the effect of the special session of Congress. This, however, can only affect the men's wear and dress goods lines. The cotton yarn business, however, is always greatly affected by the demand for yarns for men's wear, especially in such numbers as 2/22s, 2/26s and 2/32s warps and skeins. Until the demand for these numbers revives from this source spinners of these counts cannot expect a very profitable business.

Eastern Cops.

6s	20
8s	21¼
10s	21¾
14s	22¾
16s	23¼
18s	23¾
20s	24¼
22s	24¾
24s	25¼
26s	25¾
30s	26½
34s	27½
36s	28½
40s	29½

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	22½
14s	23
18s	23½
20s	24½
24s	25½
26s	26½
30s	27½
36s	30½
40s	33½
45s	37½
50s	41½
55s	46½
60s	50½

Eastern Two-Ply Warps, Carded Peeler.

2/30s	27½
2/36s	30½
2/40s	33½
2/45s	37½
2/50s	41½
2/60s	50½

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

Greene & Daniels Manufacturing Co.,

Combed, Carded and Gassed

Yarns, Threads, Twines and Chain Warps

Dye Sulphur Blacks Direct in Cops, Cones or Tubes.

Colored and Bleached Yarns Furnished in any manner desired by the trade. Pawtucket, R. I.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS. 4s to 60s.

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

JOHN F. STREET & CO.

Cotton Yarns

PROVIDENCE, R. I.

Providence, Chicago, Philadelphia, New York

Duxbury's

English Calender Roll Papers

For Embossing and Other Calenders.

Chas. A. Johnson & Co.

Sole Agents for America

55-57 Franklin Street, - New York

GRANT YARN CO.

FITCHBURG, MASS.

Combed and Carded Cotton. **YARNS** 40's and above and **WARPS**

LUDWIG LITTAUER

YARNS

Tram, THROWN SILK, Organzine.

ARTIFICIAL OR WOOD SILK.

Plain, Gassed, Mercerized, Prepared and other Cotton Yarns. Polished and Glazed Threads and Yarns. Mohair and Worsted, Tinsel and Turkey Red Yarns.

Best Quality Harness Twine

109 GREENE STREET, NEW YORK

Silk Throwing Mills BOONVILLE and YONKERS, N. Y.

YARNS

A. D. Salkeld & Bro.

COMMISSION MERCHANTS

DEP'T FRED'K VIETOR & ACHELIS

Cotton and Worsted Yarns

366 Broadway cor. Franklin St. NEW YORK

The Merwin Paper Company

Hartford, Conn.

Press Papers and Fender Boards

Correspondence Solicited

Mills at Rainbow, Conn. Address Inquiries to Rainbow, Conn.

Card and Combed Peeler. Reverse Twist Two and Three-Ply.

Size.	Carded.	Combed.
20s	$0.33	...
24s	.34	$0.50
30s	.40	.53
36s	.45	.56
40s	.47	.58
45s	.50	.61
50s	..	.66
60s	..	.72

The Philadelphia Market.

7s and coarser	21½
8s and 9s	21½
10s	21½
12s	22
14s	22½
16s	23
18s	23½
20s	23½
22s	24
24s	24½
26s	25
30s	26
40s	31½
50s	37½

Southern high grade mule yarn:—Cones.

10s	22½
12s	23
14s	23½
16s	24
18s	24½
20s and 22s	25-25½
24s	26

Southern frame yarn, lower grades:—

6s and 8s	21
10s	21¼

Eastern cones (high grade quality):—

10s	23
12s	23½
14s	24
16s	24¾
18s	25¼
20s and 22s	25¾-26¼

Skein yarn (mostly Southern):—

4s and 8s soft	21
10s and 12s	21½-22
14s and 20s	22-22½
22s	23
10/2	22
16/2	22
20/2	23
30/2	25
40/2	30
8/2	21
7/6	21½

New York, Fonda. Certificate of dissolution has been filed by the Thissen Silk Fabric Co. The machinery has been removed to Kane, Pennsylvania, and is being operated by a new concern known as the Thissen Silk Mfg. Co., as reported previously.

Edward A. Snyder

COTTON AND MERCERIZED YARNS

521 MARINER AND MERCHANT BLDG.
308 CHESTNUT STREET
PHILADELPHIA

REPRESENTING

ABERFOYLE MANUFACTURING CO.
CHESTER, PA.
MERCERIZED AND GASSED YARNS
CONES, SKEINS AND WARPS

HOLLAND & WEBB, LTD.
NOTTINGHAM, ENGLAND.
FINE COTTON AND MERCERIZED YARNS
IN COUNTS FROM 60^{s} TO 200^{s}
SILK AND ARTIFICIAL SILK
BRASS BOBBIN AND LEVER LACE YARNS
A SPECIALTY

DIRECT SELLING AGENT
MILL ACCOUNTS SOLICITED

JAMES E. MITCHELL CO., COMMISSION MERCHANTS

Cotton Yarns

122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.
28 South Tryon Street, CHARLOTTE, N. C.

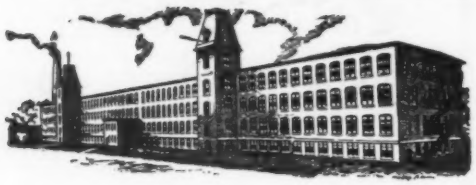
Fred Sternberg & Co.
530 BROADWAY, NEW YORK
MERCERIZED / TURKEY RED / GASSED } COTTON YARNS

William Whitman & Co.,
Commission Merchants
COTTON AND WORSTED YARNS
BOSTON. NEW YORK. PHILA. ATLANTA.
CHICAGO. BALTIMORE. ST. LOUIS. CHARLOTTE.

CATLIN & COMPANY
NEW YORK, 345-7 Broadway CHICAGO, 719 Medinah Bldg.
BOSTON, 67 Chauncy St. PHILADELPHIA, 128-130 Chestnut St.
COTTON YARNS
SOLE AGENTS:
Lawton Spinning Company, Hamilton Manufacturing Company, Tremont and Suffolk Mills,
and others furnishing full range of all numbers.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

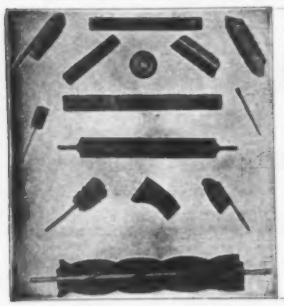
From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING COMPANY

PAWTUCKET, RHODE ISLAND

COTTON YARNS

CARDED and COMBED, in Nos. 10 to 120, from PEELER EGYPTIAN and SEA ISLAND COTTONS.
MERCERIZED YARNS, IN SINGLE OR PLY, A SPECIALTY



S. R. MASON, Treasurer

MASON BRUSH WORKS

Mill and Machine Brushes

Repairing a Specialty.

Worcester, Mass.

Century Cotton Mills

Manufacturers of

Hosiery Yarns

Nos. 10s to 30s Sell Direct

South Boston - - - Virginia

F. W. MAURER & SONS CO.

MANUFACTURERS OF

Fringes, Tapes, Bindings, & Narrow Fabrics

Office and Factory: WAYNE AVE. and BRISTOL STS.
PHILADELPHIA

INDUSTRIAL MILLS CO.

Jasper and Huntingdon Sts., - Phila., Pa.

Manufacturers of

NARROW FABRICS

Special attention paid to Plain and Fancy

SPOOL TAPES, STAY BINDINGS AND BRAIDS

Send for samples of our extra quality

ROYAL CRESCENT TAPES

in all numbers 17 to 35

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin St., NEW YORK

Flax, Hemp and Jute Line and Tow Yarns, For Weaving Purposes.

Linen Jacquard Harness Twines, Fine Cotton Harness and Heddle Twines,

For Cotton, Silk, Woolen and Carpet Manufacturers.

Correspondence solicited. Samples promptly furnished.

Knitting and Weaving YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors
Large Assortment.

EDWARD S. HYDE,

226 CHESTNUT STREET,

Philadelphia, Pa.

William B. Charles,

Amsterdam, N. Y.

Cotton Yarns, Cotton Cloth, Silesia, Sateens,

For the Underwear Trade.

Niagara Thread Co.

120-122-124 So. American St.
PHILADELPHIA

Manufacturers of

Sewing Threads and Mercerized Cotton

We manufacture a special thread for the Underwear trade.

Linen Yarns.

Dealers and agents handling linen yarns in this market report increasing sales in all lines, the hardening of prices and the scarcity of some counts seeming to have no effect upon manufacturers, who, finding that they must have the goods, are willing to pay prevailing values in order to get them.

Belfast reports have it that conditions seem to be uninteresting at the present time in so far as the spinner is concerned. The buying is solely of a filling-in character, as good line warps and finer counts are exceedingly scarce, with prices still going up. Spinners, it is said, have plenty of advance business. American importers are reported as predicting an increase in the flax now growing, which indicates a lowering of prices for the coming season.

Linen Knitting Yarns.
("A" Quality.)

35s Lea on cones	90-85
50s Lea on cones	1.00
60s Lea on cones	1.00-1.05
80s Lea on cones	1.00-1.10
90s Lea on cones	1.15-1.20
100s Lea on cones	1.30-1.35
110s Lea on cones	1.50
120s Lea on cones	1.65

*North Carolina, Haw River. Petition for the sale of the property of the Trolinwood Mfg. Co. has been made for May 1. The plant is now being operated under orders of the Court. J. R. Young is trustee.

TEXTILE MACHINERY CO.
DUNN FLYER
60 INDIA ST.
BOSTON · · MASS.

KILBURN, LINCOLN & CO.,
FALL RIVER, MASS.
MAKERS OF
LOOMS
For PLAIN and FANCY WEAVING.
Represented in the South by
O. A. ROBBINS, - - - CHARLOTTE, N. C.

Lowell Crayons
Meet the requirements of any cotton, woolen or worsted mill.
May we send samples? 15 colors and white.
Lowell Crayon Co., Original Manufacturers Lowell, Mass.
Trade Mark on every box.

THE MELLOR MATCHLESS METHOD OF
BOILER FURNACE EQUIPMENT
Mellor's "Anti-Smoke" bars are designed for efficiently burning bituminous coal. They eliminate the smoke nuisance, produce more steam and save 15 per cent. fuel.
Mellor's "Climax" bars are efficient steam producers. Consume any grade of anthracite fuel equal to forced draft. Send for Models and particulars
Mellor Furnace Engineering Co., 608 Chestnut St., Philadelphia, Pa.

TEXTILE MANUFACTURERS ! ! ! ASK ABOUT OUR NEW
HYDRAULIC TESTING MACHINE
For testing the strength of Cloth, Paper, or any material you wish to know the strength and elasticity of.
We also manufacture WARPERS and BEAMERS for Ribbons, Tapes and All Narrow Goods
C. H. KNAPP, Wait and Rye Streets, PATERSON, N. J.

F. C. BARTON
65 Worth Street, New York
MANUFACTURER OF
"LILY" BRAND NARROW FABRICS
WEB, TAPE, BINDINGS, ETC.

THE BIAS NARROW FABRIC CO.
F. C. BARTON, President
65 Worth Street, New York
Bias and Straight Cut Fabrics and Ribbons.
Embossing and Cutting Customers Own Goods a Specialty.

Pocasset Worsted Company,

Worsted Yarns.

OFFICE
100 BOYLSTON STREET BOSTON
TELEPHONE 19 OXFORD

H. HODGSON, Pres. & Treas. FRED HODGSON, Gen. Mgr.

QUEENSBURY MILLS

Mohair, Lustre and Worsted Yarns

—Single and Two Ply—

Grey—Colors on Mixtures Worcester, Mass.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

William B. Charles,

Amsterdam, N. Y., U. S. A.

Cotton and Wool Wastes

COTTON YARNS

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

Established 1844.

BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY) *Gun Mill, Paterson, N. J.*

Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.

Roving Spindles and Flyers a Specialty. Light Forgings.

REPAIRING OF ALL KINDS.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.

Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

THE FARISH-STAFFORD CO.,

Cotton Yarns and Piece Goods

ALL NUMBERS YARN CARDED AND COMBED

Gassed and Mercerized Yarns

57-59 Worth St., New York.

31 Bedford St., Boston 242 Chestnut St. Phila. 332 Medinah Temple, Chicago

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

TEXTILE MACHINE WORKS

THUN & JANSSEN, READING, PA.

Manfrs of *BRAIDING MACHINES*

for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers, Measuring Machines, Reelers, Singeing and Finishing Machinery, Special Machinery.

1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Australian
Quarter Blood

GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

The Woolen and Worsted Yarn Market.

Spinners of worsted yarns report a little better feeling from the buying trade, and while they are still hunting business they claim that there is something coming in almost every day which makes them feel some encouragement after the depression which they have been experiencing for some time.

Dress goods manufacturers are waiting on the cutting-up trade. The only call for goods they are receiving at present is for serges, in which they are using from 2/36s warps and 1/18s filling up to 2/50s warp and 1/30s filling.

Men's wear manufacturers are now waiting on the clothing salesmen's orders. The salesmen are about to start on their fall trips and what the result will be is a matter of speculation. Some manufacturers claim that business will be good, while others hold to the idea that until the special session of Congress and President Taft know what they will do to the tariff the retailer will not place any large business. Until the manufacturer sees what the cutting-up trade will do they will not be in a position to place orders for yarns. The fabrics which they have placed on the market are mostly in two-tone effects in which they are using 2/30s and 2/60s yarn.

The knitting trade is reported as being in a little better condition than heretofore and is now beginning to place orders for yarns in counts from 2/10s to 2/20s for sweaters. There is also some business from the toque manufacturers, who report being fairly busy and are buying 2/18s to 2/26s worsted and some roving yarns.

It is also reported that many of the spinners are looking into the matter of selling bundle yarns to the retail trade for home consumption and almost all the mills making this class of yarns report being actively employed.

BRADFORD SPUN YARN.

2/16 Ingrain (black)	46-48
2/16 Ingrain (light grey)	50
2/16 Ingrain (white)	53
2/12 to 2/16 low common	63-70
2/12 to 2/20 low common	68-70½
2/20 to 2/24 1/4 blood	73-78
2/26 to 2/28 1/4 blood	75-80
2/32 1/4 blood	72½-77½
2/20 3/8 blood	82½-85
2/26 3/8 blood	85-87½
2/30 3/8 blood	87½-90
2/32 3/8 blood	90-92½
2/36 3/8 blood	92½-95
2/40 1/2 blood	92½-1.02½
2/40 delaine	1.17½
2/50 delaine	1.20
2/40 Australian	1.27½-1.35
2/50 Australian	1.32½-1.37
2/60 Australian	1.40-1.45
2/24 luster	75
2/28 luster	95
2/30 and 3/32 luster	95-97½
2/36 luster	1.10-1.12½
1/24 worsted and 80s single cotton for raincloths	95
1/24 worsted and 120 single cotton for raincloths	1.10

FRENCH SPUN YARN.

1/20 1/4 blood	75-80
1/20 high 1/4	82-87½
1/20 high 3/8	97½-1.00
1/20 1/2 blood	1.05-1.10
1/30 1/4 blood	95
1/30 3/8 blood	1.00-1.02½
1/30 1/2 blood	1.03-1.05
1/40 1/2 blood	1.06-1.08
1/50 delaine	1.20
1/40 Australian	1.32½-1.35
1/50 Australian	1.37½-1.40
1/60 Australian	1.45-1.47½
1/70 Australian	1.52-1.55

Woolen and Merino Yarns.

Spinners of woolen and merino yarns report that while business for the month past has been somewhat slow, trade is now beginning to pick

up. Purchasers of yarns are beginning to specify on contracts and deliveries are being made, with some orders for yarns in lots from 2000 pounds up coming in. It is anticipated that business will now begin to improve. Most of the yarn now being specified for is 2/20 cut, 2/23 cut in oxfords, colors and double bleached in merinos and all-wool.

While knitters report having been rather dull on account of the jobbing trade holding off in placing their orders for sweaters, they are now compelled to buy if it is their wish to get goods when they want them. This is beginning to bring in business and the knitters as a consequence are becoming busier from day to day.

Weaving yarns not being in demand the spinners are working on knitting yarns only at this time. Prices, which have remained at practically the same figure for the past few months, are now beginning to stiffen.

WOOLEN AND MERINO YARNS.

Cut.	Wool.	Cotton.	
2/20 Light Grey Mixed....	80%	20%	55
2/20 Light Grey Mixed....	90%	10%	60
2/20 Light Grey All Wool.....			70
2/20 Colored All Wool.....			62½-65
2/20 Bleached	80%	20%	67½
2/20 Bleached	90%	10%	70-72½
2/20 Bleached All Wool.....			75-77½
2/25 Light Grey Mixed All Wool.....			82½-85
2/25 Bleached All Wool.....			87½-90

The Rag and Shoddy Market.

Business continues dull and unsatisfactory. Shoddy manufacturers are buying stock only to cover orders already booked, and spinners are following the same policy. The export trade continues fairly brisk, and provides a very welcome outlet for rag stock. The complicated political situation and the approach of the lightweight season lead dealers to look for a continuance of the present quiet state of trade. There are, however, factors which lead the trade to conclude that no serious break in values will occur. Wool is now practically at the exporting point, and no change of the tariff can bring about a decline in prices so long as the foreign markets remain firm. Wool substitutes are on the same basis of values. In other words the markets have discounted any change that the Washington government can bring about. What is needed now is a settlement of the tariff question so that dealers and manufacturers can attend to business without the constant fear of political disturbance.

SHODDIES AND EXTRACTS.

White yarn, best all wool.....	47-50
White knit, all wool, best fine.....	27-41
White knit, No. 2.....	33-38
Light yarn, extra fine.....	32-35
New pure indigo blue.....	30-33
Merino.	
Fine light, all wool.....	28-31
Medium light, all wool.....	17-19
Fine black, all wool.....	28-29
Fine dark, all wool, best grade.....	20-23½
Medium dark, all wool, No. 2.....	16½-17½
Red knit stock, strictly all wool.....	21½
Red flannel, all wool.....	22-27
Dark blue for hosiery, strictly all wool, No. 1	23
Dark blue for hosiery, not all wool, No. 2	16-20

WOOLEN RAGS.

Fine merchant tailors	6-9
Choice light colors	14-16
Browns	11-14
Blacks	5¾
Blues	10-11½
Fine dark	9-12
Medium dark	5-8
Worsteds.	
Blue	12-13
Black	15-17½
Serges.	
Black	11
Blue	14
Flannels.	
New scarlet	20-22½
New blue	15½
Cloakings	4-6

SOFTS AND KNIT STOCK.

Soft woolens, best	5½-6½
Old white flannels	12-14
Old red flannels	11½-12½
Old blue flannels	4-7½
Old plaids	5-10½
White stockings	21-24
Clear hoods	9-12
White hood stock	20½-25½

MILL NEWS.

New Jersey, Paterson. A number of prominent silk manufacturing concerns are planning the organization of a company to be known as the Waste Products Co. to collect, handle and sell the waste of the mills. Some of the concerns interested are William Ryle & Co., Century Throwing Co., Smith & Kaufmann. McCollom & Post, Klots Throwing Co., Appel Bros. Mfg. Co. and the Haledon Throwing Co.

New Jersey. Paterson. The Excello Silk Co. has been incorporated to manufacture silk and other textile fibers with capital stock of $20,000. The incorporators are Daniel Patrick, Henry Green and Harry T. Johnson.

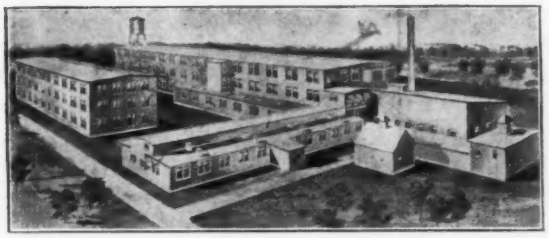
PETER B. MCMANUS,
Pres. and Treas.

EDWARD J. MCCAUGHEY,
Secy. and Mgr.

JOHN MCMANUS,
Vice-Pres.

Home Bleach and Dye Works

INCORPORATED



Dyers, Bleachers and Mercerizers of

Cotton Yarns

in skein and long and short

Chain Warps

Fast Colors a Specialty

Daily Capacity 30,000 lbs.

Fast Colors and Black for Worsted Trade

Office and Works, Pawtucket, R. I.

Established 1881.

The unvarying quality of all Cheney silk products is greatly due to the perfection and absolute uniformity of

CHENEY
SILK
YARNS

Making silk Yarns to order is a specialty in our mills—your requirements will be fully met. Silk Yarns furnished in any form, mounted on spools or cones, warped or in the hank, *for* organzines, trams or singles.

The following silk products have made Cheney Brothers a world-wide name: Cheney Dress and Lining Silks, Foulards, "Shower-proof" Foulards, Millinery and Knitting Silks, Satins, Velvets, Plushes, Silk and Velvet Ribbons, Wash and Underwear Ribbons, Cravats, Decorative and Upholstery Goods.

Silks for electrical and insulation purposes.

CHENEY BROTHERS, Silk Manufacturers, South Manchester, Conn.

Champlain Spun Silk

YARNS

FOR ALL PURPOSES

As a result of a quarter century's experience devoted solely to the manufacture of one article, we are able to offer the highest quality spun silk yarns at the lowest possible price.

In addition, we have studied the needs and convenience of the manufacturer using spun silk yarns. Our yarns are put up as required, in fhe skein, on tubes, cones, cops, spools, in short, according to your particular needs.

Yarns furnished in the natural, or dyed; the subject of fast dyeing has received our particular study and attention. Our colors submitted or your colors matched.

All our yarns are pure silk, nothing but silk; sixteen ounces to the pound and full yardage guaranteed.

"MORE YARDAGE TO THE POUND."

CHAMPLAIN SILK MILLS, Whitehall, N. Y.

Incorporated 1891

NEW YORK PHILADELPHIA SPRINGFIELD CHICAGO

MILLS { WHITEHALL, N. Y. BROOKLYN, N. Y.

The Silk Market.

The New York Silk Market has undergone somewhat of a change since our last writing, as will be seen by current quotations. No one can give any special reason for this weak market unless perhaps it may be that the raw silk dealers in Japan are in need of financial assistance and wish to turn what stock they have on hand into money. Manufacturers are fairly busy on some grades of silk, taffetas, messalines and foulards having the best sale just at this time. The ribbon manufacturers, while running fairly full, are not pushed to fill orders. This is owing somewhat to the prevailing style. Whether there will be any further drop in the prices of raw silk in Japan is problematical. Some think that prices will remain low for several months, but no one predicts but that the market has reached about its level. As one of the large silk importing houses said today to the writer, "It will be much better for all concerns if the low prices would continue for a few months, which in the end would make business very much better all around." The dry goods people are buying only on a hand-to-mouth basis. Where they used to buy five or ten pieces of silk to be distributed among their different stores, they are now buying but one piece and distributing it to their branches. This shows conclusively that the retail silk business is very dull. On the other hand, we hear that several manufacturers are increasing their capital stock, making some additions to their plants and adding machinery. This shows that they are looking forward at any rate to a fairly good business in the future.

VILLA, STEARNS COMPANY
Telephone 7950 Spring 487 Broadway, NEW YORK
RAW AND THROWN SILK
SILK ON SPOOLS, CONES, QUILLS, BEAMS
Dyed Silk for All Purposes

SOCIETA per la FILATURA del CASCAMI di SETA
Milan, (ITALY)
"CASCAMI"
Schappe, Spun Silk, Cordonnets for Sewing
In Skeins—on Cops—Spools—Cones—Beams.
In the Gray or Dyed.
Special attention to regularity of sizes.
VILLA, STEARNS COMPANY, Sole Agents for the United States and Canada.

WILLIAM RYLE & CO.,
Foreign and Domestic
Spun Silk Yarns and Noils.
Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.
54 Howard St., cor. Mercer St., NEW YORK.

SAUQUOIT SILK MFG. CO.
INSULATING AND BRAIDING SILKS
ORGANZINE, TRAM AND HOSIERY SILKS
Fast Dye Organzines for Woolen Manufacturers a Specialty
Mills: Bethlehem, Pa., Philadelphia, Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.
Philadelphia Office, 4015 Clarissa St., Nicetown
Chicago Office, 188-190 Market St. Boston Office, 78 Chauncy St.

The cotton and hosiery manufacturers are not buying much raw silk at the present time, they having acquired a large stock when the prices were low last fall. The throwsters are running fairly full with a good demand for trams and some call for organzines. In Europe the silk manufacturers are not busy and there is no great activity in the trade. In Lyons and Milan the silk manufacturers are reported as fairly busy, but are not buying a great deal of raw silk. All in the silk trade think that business will take on a brisk aspect within two or three months. All depends upon the demand by the consumer and the styles which will be received soon from Paris.

Below are quoted the prices current:

European.

Grand Extra Classical Piedmont	4.50-4.55
Extra Classical Italian	4.25-4.30
Classical Italian	4.12½-4.17½
Best No. 1 Italian	4.07½-4.12½

60 days' basis.

Japan.

Filature Kansai Extra Extra	3.90-3.95
Filature Kansai Extra	3.80-3.85
Filature Shinshu Extra	3.77½-3.82½
Filature Kansai No. 1 Extra	3.77½-3.80
Filature Kansai Best No. 1	3.75-3.77½
Filature Kansai No. 1	3.67½-3.70
Filature Shinshu No. 1	3.65-3.67½
Rereels No. 1	3.95-3.97½
Rereels No. 1 to 1 1/2	3.87½-3.90
Rereels No. 2	3.70-3.75
Canton Filature Extra Extra A 14/16	3.20-3.25
Canton Filature Extra Extra B 14/16	3.12½-3.15
Canton Filature Extra A 14/16	3.07½-3.10
Canton Rereels Selected Nos. 1-2	2.85-2.87½
Canton Rereels Ordinary Nos. 1-2	2.60

Six months' basis.

China.

China Steam Filature First Grade	4.30-4.35
China Steam Filature Second Grade	4.15-4.20
Tussa Best Chops 8 Cocoons	1.05-1.70
Tsattle Blue Dragon	3.40-3.45
Tsattle Kunkee Mars No. 1	2.90-2.95

The spun silk manufacturers are still doing a fairly good business. The demand for spun silk seems to have developed wonderfully in almost all lines of textile manufacturing. While the buying is still in small lots, yet in the aggregate it amounts to a good volume of business. Much spun silk is being used by the cotton, worsted and hosiery manufacturers. Prices remain unchanged and are quoted below:

60/2	3.40
50/2	3.30
40/2	3.20
30/2	3.05
20/2	2.95
10/2	2.85

For second quality the prices remain the same as our last report.

SPUN SILK
YARNS FOR ALL PURPOSES
AMERICAN SILK SPINNING CO., PROVIDENCE, R.I.

Castles Ivory White Mill Paint
Will increase the light value in your mill
40%
FIREPROOF AND SANITARY
Write for samples and prices
The Castle Water Paint Co., 123 Liberty St., New York

SILK MILL SUPPLIES
OF EVERY KIND AND DESCRIPTION
Also Power Transmission Supplies for General Mill Use.
I. A. HALL & CO.
Paterson, N. J.
Allentown Reed, Harness and Mill Supply Co., Allentown, Pa.

Crochet Lace Edgings
Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps,
Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias.
Write for Prices and Samples.
George W. Chapin, 229-231 Church St., Philadelphia.

New Bedford Textile School

Day and Evening Instruction in

Picking,
Carding,
Combing,
Spinning,
Warp Preparation,
Weaving,
Designing,
Knitting,
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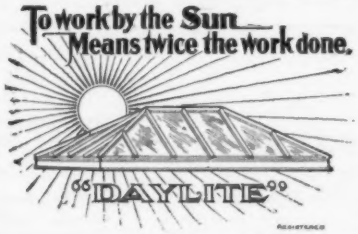

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compels your watchman to visit as many danger places in your plant as you wish. You may start with one clock and one station, and then add stations up to 96. No two sets of keys duplicates. This clock

Is An Infallible Check on Your Watchman.

Approved and labeled by Underwriters' Laboratories. Protects you from fire and burglar risk. Investigate—send for catalog H-43.

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Eastern Representative, A. C. Rowe & Son, 33 Reade St., New York

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So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

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Cleans Wool, Floors, Anything

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Scrooping Liquors.

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Cash Capital, $3,000,000.

ASSETS January 1, 1911	$30,178,913
LIABILITIES (Including Capital	16,349,300
RESERVE AS A CONFLAGRATION SURPLUS	1,500,000
NET SURPLUS OVER ALL LIABILITIES AND RESERVES	12,329,613
SURPLUS AS REGARDS POLICY-HOLDERS	16,829,613
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OWNERS OR TENANTS may have for the asking proper advices in relation to the FIRE HAZARD and the Value of Automatic Sprinkler and other protection for the manufacturing or distributing plant. Correspondence invited by the

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Acetic, 100 lbs.	1.90-2.30
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Oxalic	7-8½
Sulphuric, 66°, 100 lbs.	1.00-1.25
Muriatic, 18°	1.20-1.35
Tartaric crystals	27-29
Miscellaneous Chemicals and Dyestuffs.	
Acetate of lime, gray, 100 lbs.	2.00-2.05
Alum, lump	1.75-1.90
ground	1.85-2.00
powdered	3.00-3.15
Aqua ammonia, 26°	3-6½
Borax	4-5
Brimstone, crude, ton	
Copperas	65-80
Cream tartar, crystals	25-27½
Fuller's earth, powdered, ton	22-25
Glauber's salt	65-85
Potash, chlorate, crystals	9-9½
powdered	13-14
carbonate	
Soda, bicarbonate	1.15-1.50
Soda, caustic, domestic, 60 per cent.	1.75-1.90
Sal., American	70-85
Vitriol, blue	3-7
Acetate of soda	3½-8½
Acid, picric, best crystals	25-50
tannic, commercial	30-40
Albumen, egg	
blood	25-35
Alizarine, red	19½
Aniline, oil	8-14½
salt crystals	14
Bichromate of potash, American	8½-12½
Bichromate of soda	7½-13½
Bisulphite of soda	2-7
Cutch, mat	4½-10½
Dextrine, imported potato	5-11
Divi-divi, ton	35-46

FIRES.

Maine, Wilton. Damage amounting to about $1,000 resulted from a fire in the plant of the Wilton Woolen Co. A quantity of wool was destroyed and two pickers were damaged.

New Hampshire, Lakeport. Fire in the plant of H. H. Wood & Co. caused a loss of a little over $5,000, mostly by water. Repairs are being made and the plant is running as usual.

New Hampshire, Marlboro. Fire in the card room of the Monadnock Blanket Mills caused loss of about $2,000, fully covered by insurance. Three of the four sets of cards that were damaged are running and the balance of the machinery will be in operation within a few days. In a short time a new set of cards will be installed, making this a 6-set mill.

The WM. H. LORIMER'S SONS CO.,

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES.

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ONTARIO AND LAWRENCE STS., PHILADELPHIA, PA.

Skeins, Cones, Tubes and Warps

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SIMON FRIEDBERGER, President.

EXPERT BLEACHING AND DYEING

Hosiery, Underwear, KNIT GOODS of every description, YARNS, TOWELING, ETC.

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OF COTTON WARPS AND SKEIN YARNS

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Dyers of Peerless Black on Artificial Silk.

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Bleachers and Dyers of COTTON YARNS and STOCKINET

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AND ALL BRAIDED FABRICS.

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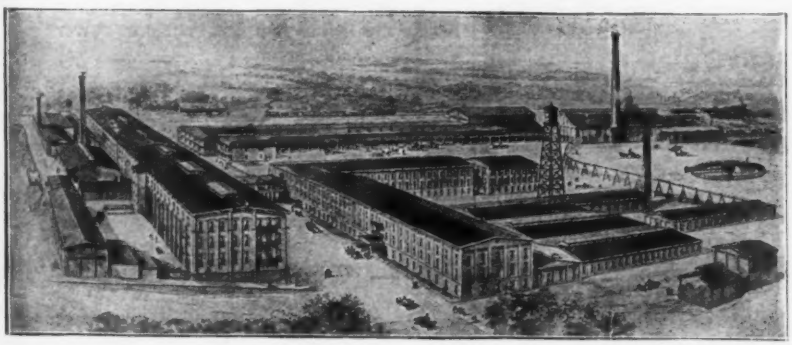

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Barrett Specification Roofs
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Big High-Grade Roofs

THE Minnesota & Ontario Power Co. faced a familiar problem in 1909 when it planned its big buildings at International Falls, Minnesota. The total roof area was 200,000 square feet.

If they used a tin roof, the cost would be considerable, and the expense of painting regularly would be very heavy. A Ready Roofing would be cheap at the beginning, but it would also require continuous painting. This is one of the fundamental weaknesses common to all ready roofings which makes them absolutely unfitted for use on permanent structures.

They finally decided to use a Barrett Specification Roof of Coal Tar Pitch, Felt and Gravel. This was the natural and right solution. Such roofs have been in use for fifty years, and for large commercial and manufacturing buildings, they enjoy almost a monopoly on account of their economical service record.

In deciding upon a Barrett Specification Roof, the Minnesota and Ontario Power Company made certain—

That there would be no maintenance expenses such as painting every few years;

That there would be no leaks or troubles;

That they would have a fire retardant roof;

And that the net cost per year of service would be lower than that of any other type of covering known.

For economy, for satisfaction and security, Barrett Specification Roofs should be used on all first class buildings.

Copy of the Barrett Specification will be sent free on request. Address nearest office.

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New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

TRADE B MARK

Mill Stocks.

FALL RIVER MILLS.

	Bid.	Par Asked.	Last Sale.
American Linen Co	...	98	97
Arkwright Mills	...	...	...
Barnard Mfg. Co	...	105	...
Bourne Mills	...	105	...
Border City Mfg. Co	...	145	...
Chace Mills	...	128	127
Cornell Mills	...	...	...
Davol Mills	...	100	...
Davis Mills	...	115	...
Flint Mills	...	101	100
Granite Mills	...	142	...
Hargrave Mills	...	125	...
King Philip Mills	...	170	...
Laurel Lake Mills	...	180	...
Lincoln Mfg. Co	...	97	...
Luther Mfg. Co	...	...	...
Merchants' Mfg. Co	...	99	...
Mechanics' Mills	100	...	...
Narragansett Mills	...	137½	...
Osborn Mills	116	...	...
Parker Mills	...	118	...
Pocasset Mfg. Co	...	145	...
R. Borden Mfg. Co	...	170	170
Sagamore Mfg. Co	...	160	...
Seaconnet Mills	...	...	...
Shove Mills	96	100	...
Stafford Mills	...	98	...
Stevens Mills	...	97	...
Tecumseh Mills	118	120	...
Troy C. & W. Mfy	...	...	...
Union Cotton Mfg. Co	...	230	...
Wampanoag Mills	...	99	...
Weetamoe Mills	...	100	...

NEW BEDFORD MILLS.

The following are the quotations of New Bedford Mills, as quoted by Sanford & Co.

	Par Value.	Bid.	Asked.
Acushnet Mills	100	167½	...
Beacon Mfg. Co., com	100	102	...
Beacon Mfg. Co., pref	100	110	112½
Booth Mfg. Co., com	100	94	100
Booth Mfg. Co., pfd	100	...	98
Bristol Mfg. Co	100	115	120
Butler Mfg. Co	100	...	145
City Mfg. Co	100	178	181
Crescent Mfg. Co. (silk)	100	...	100
Crescent Mfg. Co., pfd	100	...	100
Dartmouth Mfg. Co	100	*307½	...
Dartmouth Mfg. Co., pfd	100	108¼	...
Gosnold Mfg. Co., pfd	100	...	104
Grinnell Mfg. Co	100	240	250
Holmes Mfg. Co	100	108	...
Holmes Mfg. Co., pfd	100	108	109
Kilburn	100	...	140
Manomet	100	...	121
Nashawena Mills	100	90	92½
Neild Mfg. Co	100	...	98
N. B. Cotton Mills Co	100	...	...
N. B. Cotton Mills Co., pfd.	100	90	...
Nonquitt Spinning Co	100	105	115
Page Mill	100	125	130
Pierce Mill	100	460	500
Pierce Bros., Ltd.	100	100	...
Potomska Mills	100	...	132
Quissett Mills	100	...	95
Sharp Mfg. Co., com	100	...	100
Sharp Mills Co., pfd	100	...	95
Soule Mills	100	129	...
Taber Mills	100	133	...
Wamsutta Mills	100	*142½	...
Whitman Mill	100	182	185

* Ex-dividend.

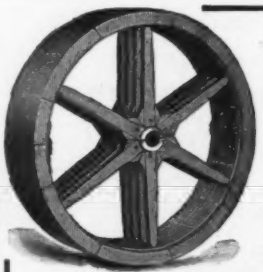
OTHER NEW ENGLAND MILLS.

Quotations furnished by Wainwright & Co.

	Value.	Last Sale.
Amoskeag Mfg. Co., N. H	100	320⅛
Androscoggin Mills, Me	100	194½
Appleton Co., Mass	100	175⅛
Arlington Mills, Mass	100	130½
Atlantic Cotton Mills, Mass	100	75
Bates Mfg. Co., Me	100	245½
Bigelow Carpet Co., Mass	100	171½
Boott Cotton Mills, Mass	100	98⅛
Boston Duck Co., Mass	700	1350
Boston Mfg. Co., Mass	100	106¼
Cabot Mfg. Co., Me	100	110½
Chicopee Mfg. Co., Mass	100	125
Continental Mills, Me	100	109¼
Dwight Mfg. Co., Mass	500	1200
Edwards Mfg. Co., Me	100	99
Essex Co., Mass	100	197½
Everett Mills, Mass	100	150
Fisher Mfg. Co., Mass	100	121½
Franklin Co., Me	100	116¼
Great Falls Mfg. Co., N. H	100	187½
Hamilton Mfg. Co., N. H	1000	850
Hamilton Woolen Co., Mass	100	108
Hill Mfg. Co., Me	100	115¾
Jackson Co., N. H	1000	985
Lancaster Mills, Mass	100	125
Lawrence Mfg. Co., Mass	100	180
Lockwood Co., Me	100	105
Lowell Bleachery, Mass	100	211
Lowell Hosiery, Mass	100	42
Lyman Mills, Mass	100	130½
Massachusetts Cotton Mills, Ga	100	100
Massachusetts Cotton Mills, Mass.	100	128½
Merrimack Mfg. Co., com., Mass	100	62¼
Merrimack Mfg. Co., pfd., Mass	100	100¾
Middlesex Co., Mass	100	43
Monadnock Mills, N. H	1000	1002½
Nashua Mfg. Co., N. H	500	632
Naumkeag Steam Cot. Co., Mass	100	148½
Newmarket Mfg. Co., N. H	100	145
Otis Mfg. Co., Mass	1000	1852½
Pacific Mills, Mass	1000	3640
Pepperell Mfg. Co., Me	100	290¼
Plymouth Cordage Co., Mass	100	260¼
Salmon Falls Mfg. Co., N. H	300	275
Shaw Stocking Co., Mass	100	117
Suncook Mills, N. H	100	69½
Thorndike Mfg. Co., Mass	1000	1200
Tremont & Suffolk Mills, Mass	100	105¼
Waltham Bleachery & Dye Works, Mass.	100	129
York Mfg. Co., Me	100	146

Acme Bale Ties and Buckles

Acme Steel Goods Co.
CHICAGO
58-64 W. Alabama St. 151 Lafayette St.
ATLANTA NEW YORK CITY



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When Ordering New Cards
Always Specify "DRONSFIELD" Grinders
The Grinders of World-Wide Fame
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Cuts Depreciation Costs.
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Bay State Brick and Cement Coating

will do all the work of the mill white paints and has these exclusive advantages. It will not chip, flake or peel off when applied over delicate machinery and will protect concrete or cement against moisture.
Wadsworth, Howland & Co., Inc.
Paint and Varnish Makers and Lead Corroders
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Self-Contained Noiseless No Gears Does Not Throw or Spill Oil

TRANSMITS POWER AT RIGHT ANGLES
Its motion is positive and there is no variation in angular velocity. The Friction Loss is from 7 to 10 per cent. which is less than an ordinary countershaft.
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ASHBURNHAM, MASS.

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And How They're Put In
The bristles in Felton-made Brushes are bought in quantities large enough to meet the demands of the world's biggest brush business. They are bought at low prices and sold comparatively low. The bristles are fastened by patented processes and stay fastened.
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S. A. FELTON & SON CO.
MANCHESTER, N. H., U. S. A.
BRUSHES

SOUTHERN MILLS.

Quotations of Southern cotton mill stocks furnished by Hugh McRae & Co., Wilmington, N. C.

	Bid.	Asked.
Abbeville Cotton Mills, S. C.	72½	...
Aiken Mfg. Co., S. C.	...	90
American Spinning Co., S. C.	160	165
Anderson Cotton Mills, S. C.	...	50
do preferred	...	90
Arkwright Mills, S. C.	100	103
Augusta Factory, Ga.	50	53
Avondale Mills, Ala.	116	125
Belton Mills, S. C.	135	145
Bibb Mfg. Co., Ga.	...	114
Brandon Mills, S. C.	...	100
Cabarrus Cotton Mills, N. C.	125	140
Chadwick Hoskins Mfg. Co., N. C.	...	100
do preferred	...	100
Chiquola Mfg. Co., S. C.	170	175
Clifton Mfg. Co., S. C.	...	90
Clifton Mfg. Co., S. C., pfd.	...	100
Clinton Cotton Mills, S. C.	...	125
Columbus Mfg. Co., Ga.	...	95
Consolidated Cotton Duck	...	...
Consolidated Cotton Duck, pfd.	...	...
Cotton Duck 5s	...	...
Courtney Mfg. Co., S. C.	90	100
Dallas Mfg. Co., Ala.	98	110
Darlington Mfg. Co., S. C.	...	85
Drayton Mfg. Co., S. C.	...	100
Eagle & Phenix Mills Co.	110	125
Easley Cotton Mills, S. C.	...	170
Enroee Mfg. Co., S. C.	...	54
Enroee Mfg. Co., S. C., pfd.	...	100
Enterprise Mfg. Co., Ga.	80	85
Exposition Cotton Mills, Ga.	195	200
Gaffney Mfg. Co., S. C.	71	74
Graniteville Mfg. Co., S. C.	...	150
Gainesville Cotton Mills, Ga.	70	...
Granby Cotton Mills, S. C., 1st pfd.	...	35
Greenwood Cotton Mills, S. C.	58	60
Grendel Mills, S. C.	100	108
Henrietta Mills, S. C.	160	170
John P. King Mfg. Co., Ga.	...	85
Lancaster Cotton Mills, S. C.	130	135
Lancaster Cotton Mills, S. C., pfd.	97	100
Langley Mfg. Co., S. C.	...	120
Laurens Cotton Mills, S. C.	...	125
Limestone Mills, S. C.	150	170
Lockhart Mills, S. C.	...	70
Lockhart Mills, pfd.	...	100
Loray Mills, N. C., pfd.	95	98
Marlboro Cotton Mills, S. C.	...	72
Mayo Mills, N. C.	120	...
Mills Mfg. Co., S. C.	...	100
Mills Mfg. Co., S. C., pfd.	...	109
Monaghan Mills, S. C.	100	105
Monarch Cotton Mills, S. C.	102	110
Newberry Cotton Mills, S. C.	125	140
Norris Cotton Mills, S. C.	125	130
Olympic Cotton Mills, S. C., pfd.	...	90
Orangeburg Mfg. Co., S. C., pfd.	...	80
Orr Cotton Mills, S. C.	...	105
Pacolet Mfg. Co., S. C.	...	95
Pacolet Mfg. Co., S. C., pfd.	...	99
Pelzer Mfg. Co., S. C.	150	160
Piedmont Mfg. Co., S. C.	...	171
Poe Mfg. Co., S. C.	...	125
Raleigh Cotton Mills, S. C.	100	105
Richland Cotton Mills, S. C., pfd.	...	45
Roanoke Mills, N. C.	153	200
Saxon Mills, S. C.	127	...
Sigley Mfg. Co., Ga.	65	70
Spartan Mills, S. C.	...	140
Springstein Mills, S. C.	...	100
Tucapau Mills, S. C.	300	...
Trion Mfg. Co., Ga.	...	127½
Union-Buffalo Mills Co., S. C., 1st preferred	...	60
Victor Mfg. Co.	110	115½
Warren Mfg. Co., S. C.	95	100
Warren Mfg. Co., S. C., pfd.	100	105
Whitney Mfg. Co., S. C.	120	125
Williamston Mills, S. C.	120	126
Wiscassett Mills, N. C.	120	135
Woodruff Cotton Mills, S. C.	110	120
Washington Mills, Va.	...	30
Washington Mills, Va., pfd.	106	110
Woodside Cotton Mills, S. C.	...	98
Woodside Cotton Mills, S. C., pfd.	...	97½

CANADIAN MILLS.

	Bid.	Asked.	Last Sale.
Can. Col. Cotton	62¾	63½	64
Dominion Textile pfd.	102½	104	107½
Montreal Cotton	134	136	...
do preferred	...	95	96

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If not there's one reason for using

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If not, there's another reason for using **Non-Fluid Oil.**

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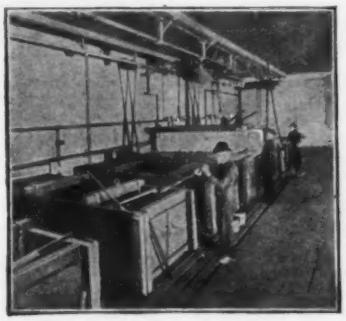

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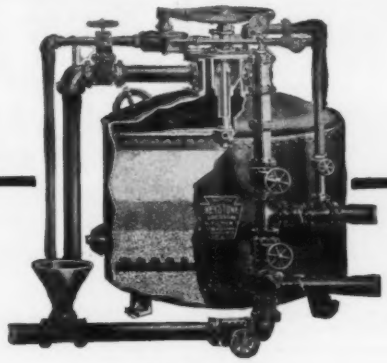

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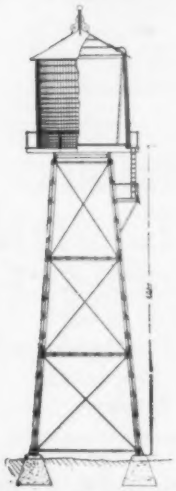

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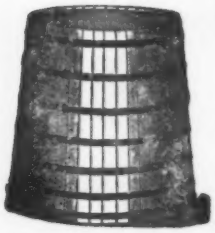

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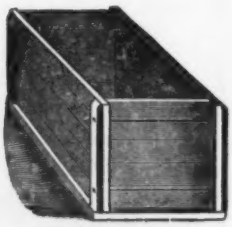

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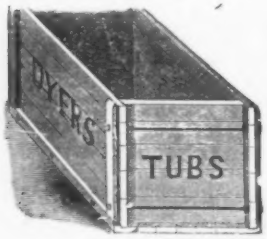

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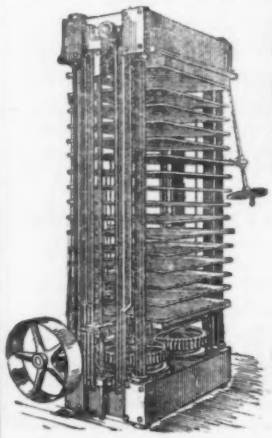

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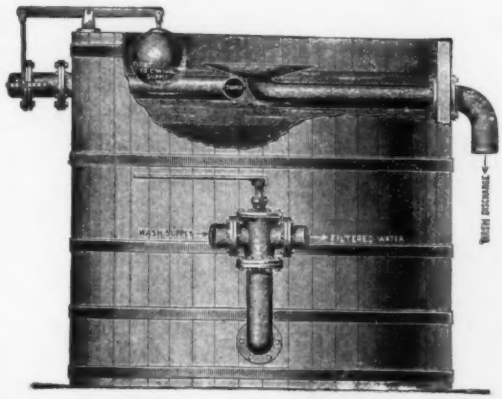

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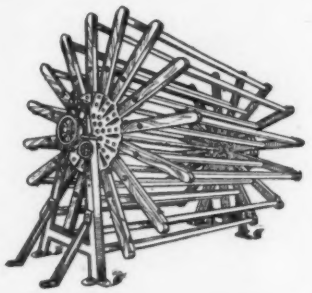

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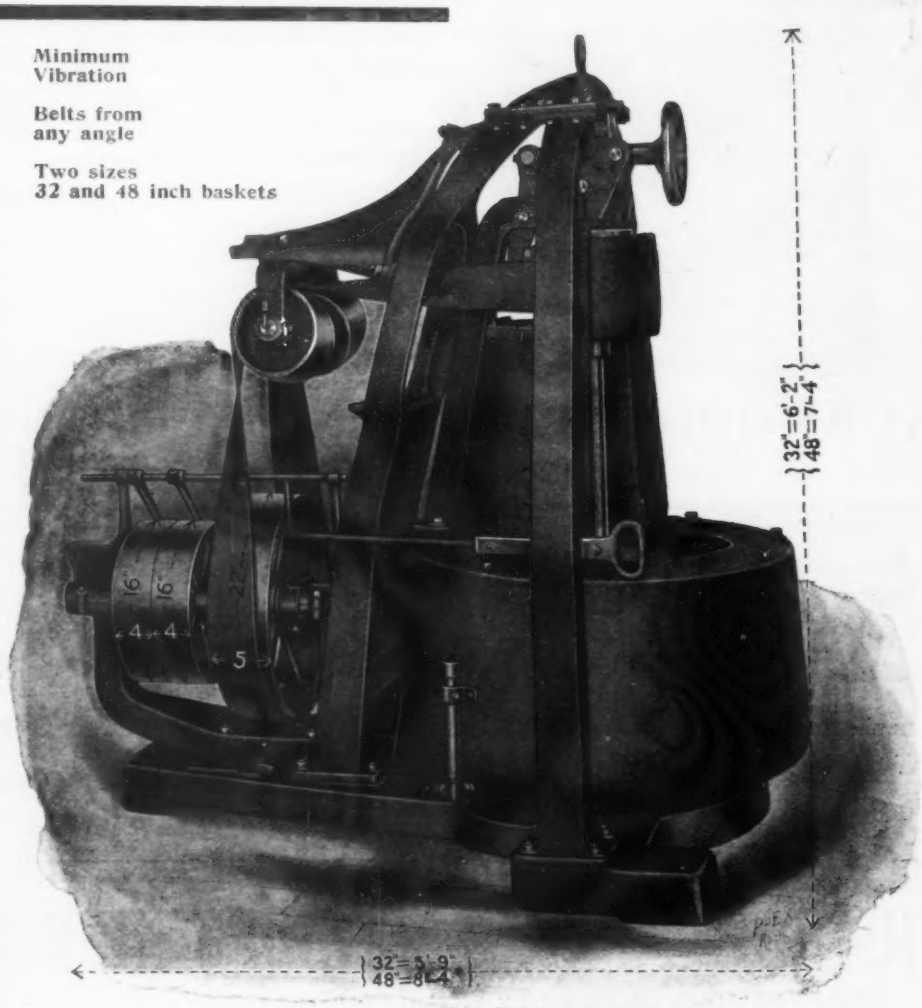

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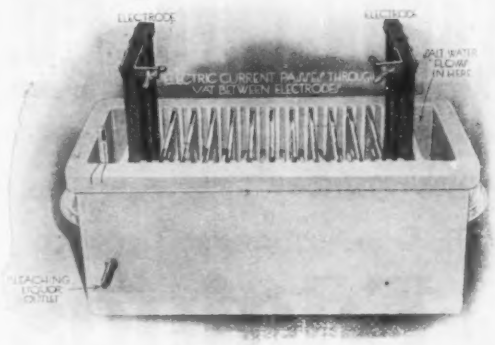

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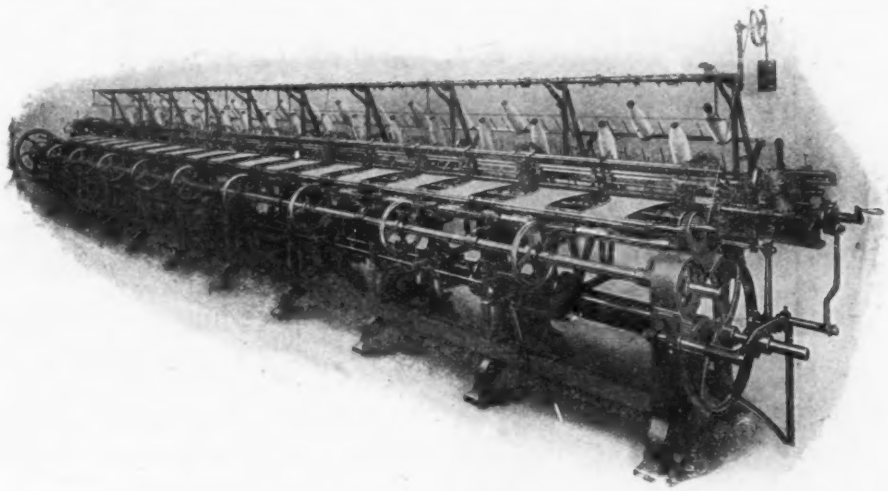

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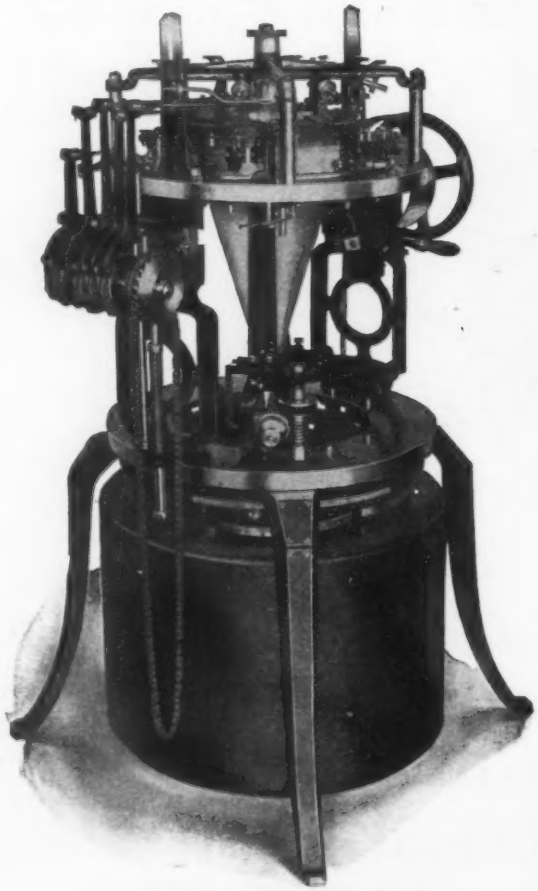

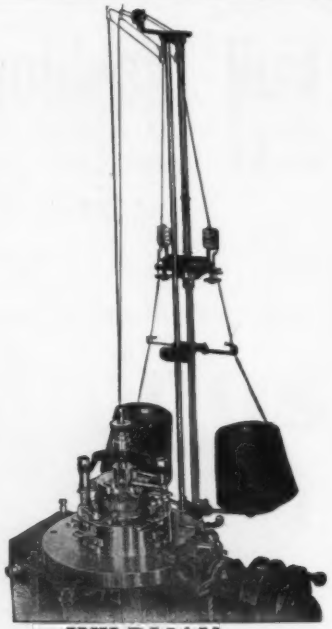

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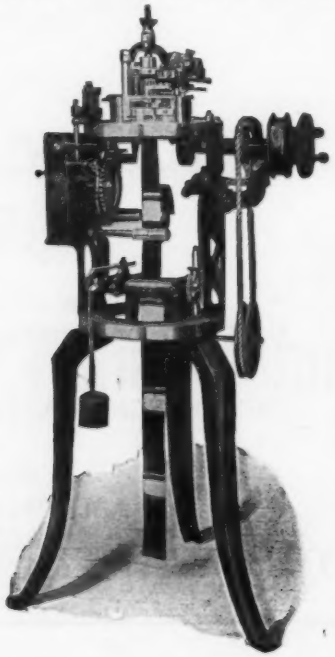

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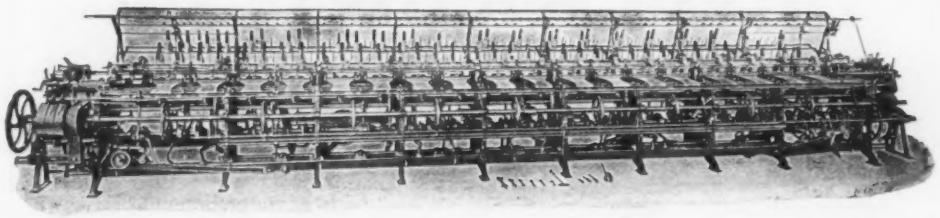

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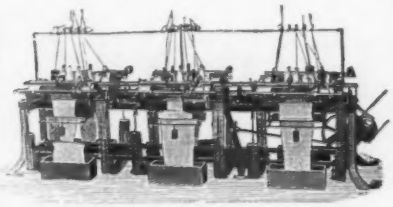

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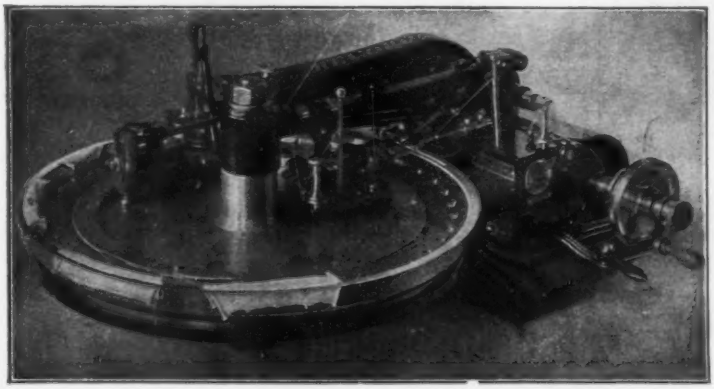

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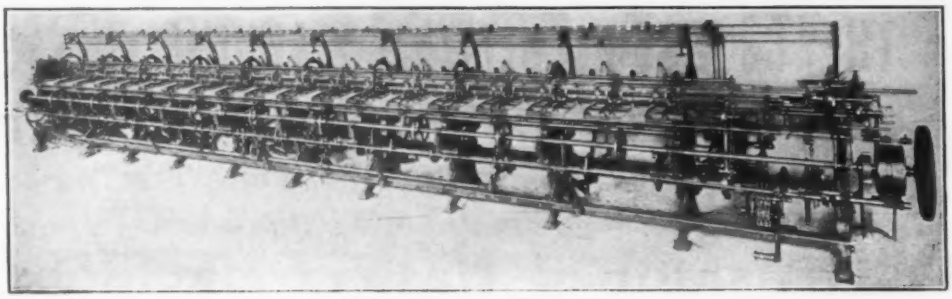

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Built in all gauges, any number of sections, and with any attachments desired. Best constructed, easiest running and most productive machines on the market. Also builders of LACE MACHINES system "Gothrough," NETTING MACHINES, system "Double Locker," LACE CURTAIN MACHINES.

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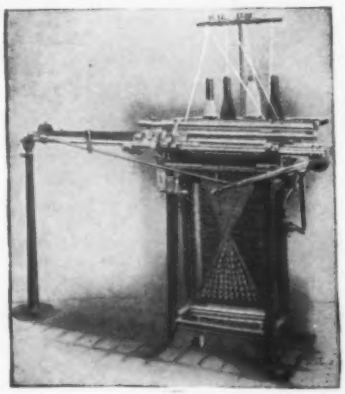


Couvet, Switzerland

BUILDERS OF

Flat Knitting Machines

FOR POWER AND HAND, FULL AUTOMATIC, ETC.

Links and Links (Pearl Stitch) Machines, Automatic Widening Machines, Jacquard Machines, etc.

Acknowledged by experts, users and judges to be

"The Best"

Machines can be seen in operation.

Flat Rib Machines, Improved Cotton System, Rashel Machines, Warp Knitting Machines, Winders, Standard Overseamers, Whipstitch Machines with Automatic Trimming Attachment.

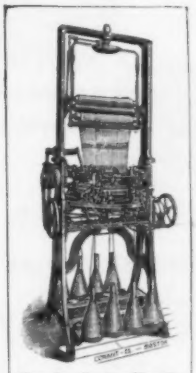
E. O. SPINDLER, Agent

350 BROADWAY Rooms 520-21 NEW YORK, N. Y.

CHARLES COOPER

BENNINGTON, VERMONT.

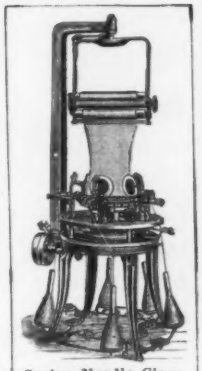
MANUFACTURER OF



Circular Spring Needle Rib Top Machine.

Knitting Machinery

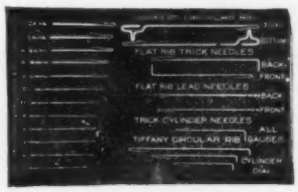
Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder.



Spring Needle Circular Plain Body Machine.

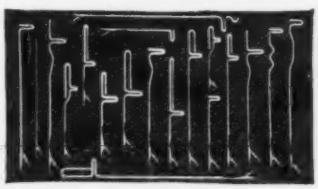
Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.



Spring Needles.

Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



Latch Needles.

COLLARETTE ATTACHMENT.

AMERICAN REPRESENTATIVE.

G. H. ROGERS,
55 So. Pine Ave., Albany, N. Y.

EUROPEAN REPRESENTATIVE.

FELIX LEDERER.
Ix/4 Schubertgasse, Nr. 22, Vienna, Austria.

Union Special Triple Interlock Machines

For Attaching Cuffs to Sleeves

Flat elastic uniform seam

Cut edges of fabric hidden by durable overseaming

Sleeve gathered in to equal width of cuff

Patented seam

Sample of work cheerfully furnished

High Speeds

Joining Cuffs to Knit Underwear with Style 5100 H

High Efficiency

Union Special Machine Company

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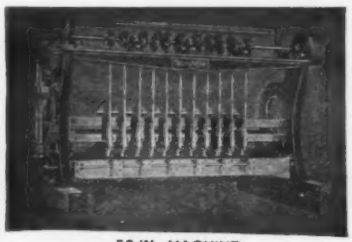


50-IN. MACHINE

L. F. FALES

MANUFACTURER AND BUILDER OF

SEWING Manuplex MACHINES

For all purposes where a number of rows of stitching are required. With either form of stitch, single thread chain, double thread chain, or lock-stitch, sewing material from 1-16 in. thick, up to 1 in. thick, and up to 120 in. wide. Furnished with any required number of needles, spacing to suit requirements.

DESIGNER OF SPECIAL MACHINERY

WALPOLE, MASS. U. S. A.

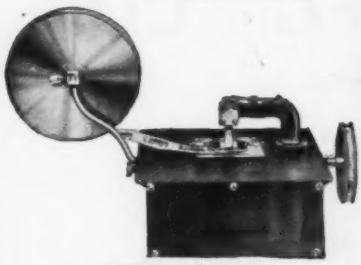
PAPER SLITTING MACHINES

THE ROSE AUTOMATIC LABEL MACHINES

Machine Complete $100.00

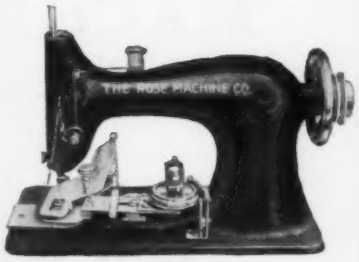
BY THE ROSE METHOD THE LABELS ARE TAKEN, CUT AND FOLDED FROM ONE MACHINE AND PLACED IN THE OTHER THE SAME AS A BUTTON IS PLACED IN A BUTTON SEWER. MACHINES ADJUSTABLE TO ANY SIZE LABEL.

Machine Complete $175.00



PATENT APPLIED FOR
Automatic Label Cutting and Folding Machine.

SEWS ALL FOUR SIDES WITHOUT SLOWING UP AT CORNERS OR TURNING GARMENT, AS QUICKLY AS A PLAIN SEWER CAN STITCH A STRAIGHT SEAM OF THE SAME LENGTH



PATENTED
Automatic Label Stitching Machine.

AFTER GARMENT IS PLACED UNDER FEED NO ATTENTION ON THE PART OF THE OPERATOR IS REQUIRED

Can be used for Underwear, Overalls, Finishing Buttons or Shirt Fronts, Paper Tags, etc. Send for catalog of both machines. Our Automatic Label Cutting and Folding Machine is particularly adapted for Hangers of all descriptions.

THE ROSE MACHINE COMPANY, INC.

OFFICE, 317 WIDDICOMB BLDG., GRAND RAPIDS, MICHIGAN

THE MOST COMPLETE LINE OF

Sweater Coat Machines

Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
Plain Sweater Coat Machines.
Pineapple Stitch Sweater Machines.
Jersey Sweater Machines.
Plain Binding Machines.
Rotary Jacquard Binding Machines.

FOR INFORMATION, ADDRESS

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LITTLE FALLS, · NEW YORK, U. S. A.

EXCELSIOR KNITTING MACHINE MFG. CO.

Meadow and Washington Streets

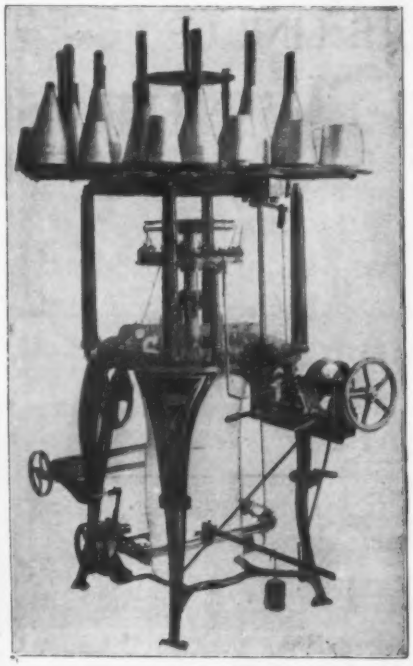
ALLENTOWN, PENNA.

BUILDERS OF

Full Automatic Knitters

With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH



LEIGHTON'S LATEST IMPROVED MULTIPLE FEED

With Automatic Stop Motions and Brake complete splendidly adapted for all wool or for cotton and worsted plated.

Good Production
Good Fabric
Good Speed

Plain or automatic 4 to 16 Feeds
Want a Catalog?

We also build the Automatic Rack Sweater Machine, Abel Winders, Seamers and Loopers

Leighton Machine Co.

Manchester, - - - - - N. H.

SPUN SILK for KNITTING

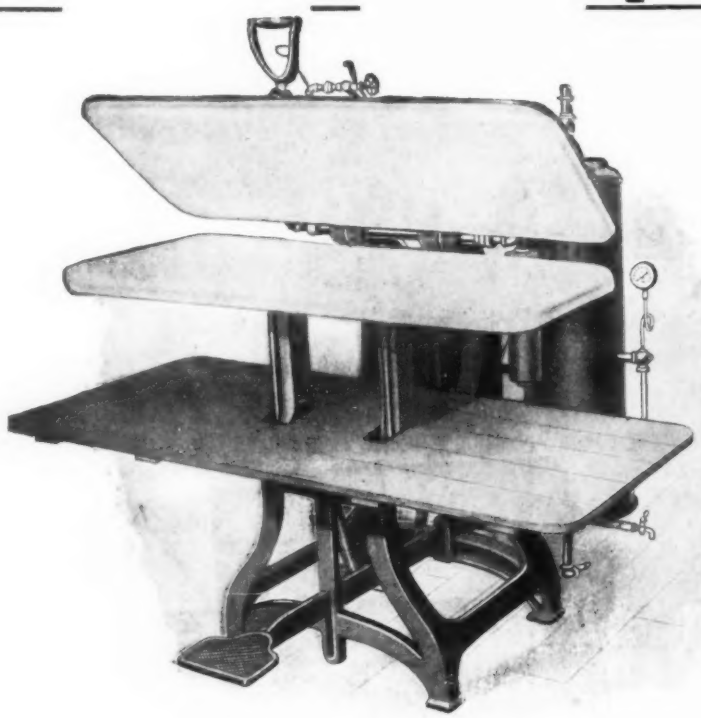
Most knitters who have gone into silk order it wound by the "UNIVERSAL SYSTEM" or install the No. 50 Self-oiling "UNIVERSAL" machine, which for this purpose is equipped with an emulsion trough to moisten the silk and is fitted to wind on enamelled wooden cones.

"UNIVERSAL" WINDING MACHINERY

Manufactured solely by

UNIVERSAL WINDING CO., BOSTON

Our F Special



SANITARY STEAM UNDERWEAR PRESS

This machine is built FOR and is especially adapted for the use of . . . *THE KNIT GOODS TRADE*

Direct connected or boiler attached. Presses union or two-piece suits—wool, cotton or silk. Sweaters and Sporting Goods.

PATENTED

Sept. 1, 1908
July 13, 1909
Nov. 2, 1909
Other Patents Pending

Size of Head and Buck (no gas on head) . .

F. . . . . 20 x 50
F. Spec . . . . . 24 x 60
F. Spec . . . . . 30 x 72
With sliding buck.

INFRINGERS PROSECUTED

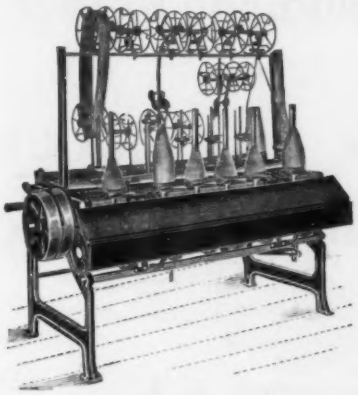
SEND FOR CATALOG

United States Hoffman Co.

SYRACUSE, N. Y.

A. W. ALLEN
2427 Mascher St., Phila.

WINDERS



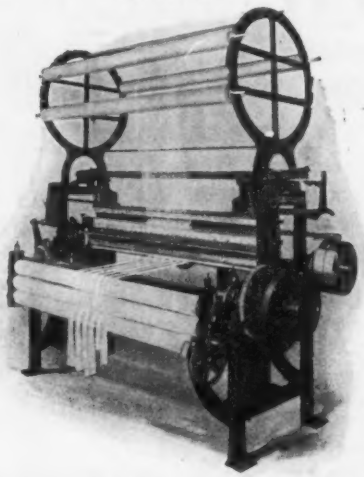
6 SPINDLES UP

The best winder on the market. If you are not using one or more try one.

George W. Lindley

5122 Wakefield St., Germantown, Philada.

BUILDER OF



Lace and Edging Machine

Also Textile and Special Machinery
Rib Knitting Frames

NYE & TREDICK CO.

718-720 Cherry Street
PHILADELPHIA, PA.

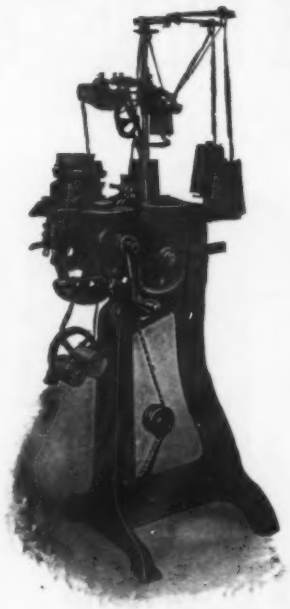
Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

Quality of Fabrics and Production
UNEXCELLED

NYE & TREDICK CO.



THE INVINCIBLE

Full Automatic Knitter

The machine that stands for

QUALITY OF PRODUCT

Jenckes Knitting Machine Co.

SUCCESSOR TO
KNITTING MACHINE DEPARTMENT OF
E. JENCKES MFG. CO.

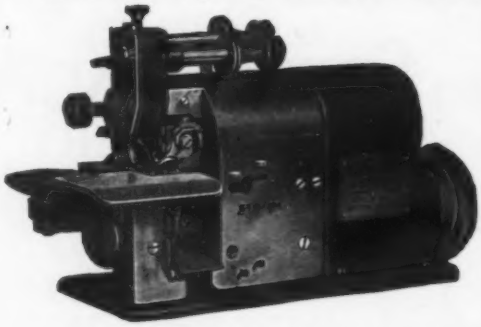
Pawtucket, R. I.

Philadelphia Show Rooms, 1211-1217 Filbert Street

The Merrow

High Speed Overseaming, Overedging and Scallop Stitch Machines are

FAST
DURABLE
Light Running



***OUR STYLE 60 MACHINE** for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.*

USE STYLE 18 for Horse Blankets.
STYLE 17 or 22 for Bed Blankets.
STYLE 35 B SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. HARTFORD, CONN.

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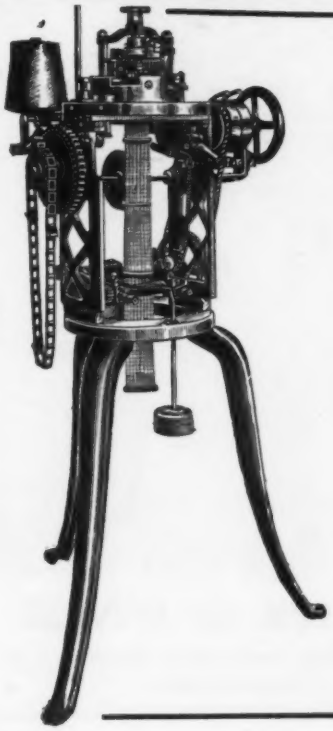
WOLFGANG RICHTER, 522 No. 4th St., Phila, Pa.

BUILDER OF **FULL FASHIONED HOSIERY MACHINES**

Newly constructed in any gauge for any material. For further particulars address above.



Expense-Reducing

Knitting Machinery

FOR

Hosiery, Underwear, Sweaters, Toques, etc.

You can economize on production costs by using our

Improved Automatic Ribber

AND

Full Automatic Knitter

Estimates Furnished for Complete Equipments Send for Particulars.

H. Brinton Co.

213-215 Race St., Philadelphia, Pa.

1911

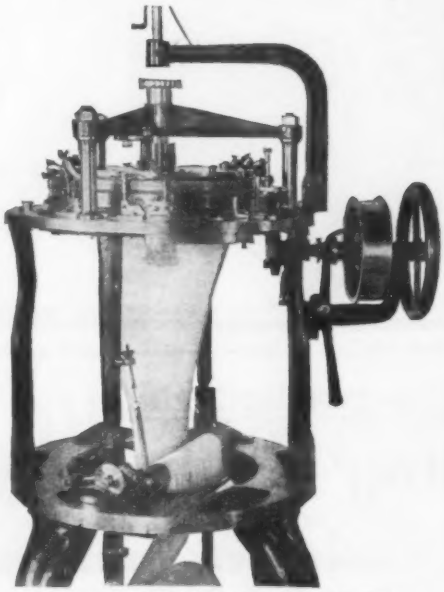
CRANE MFG. CO.

Established 1870 LAKEPORT, N. H. Incorporated 1890

Spring and Latch Needle Machines

for both Rib and Plain Work Economically Producing

A GREAT VARIETY OF FABRICS



NEW SPRING NEEDLE RIB MACHINE

This machine is usually made in sizes from 13" to 21" in diameter, but can be built in other sizes when required and is made in gauges ranging from 16 to 8 needles to the inch.

It is designed to make a high grade of ribbed underwear and will produce the finest fabric on the market.

SOME CRANE FEATURES

Patent removable hardened Wing Burr Wheels.

Patent Thread Stop Motion can be fitted to 20 in. and 40 in. frames and are specially adapted for making fine Jersey Cloth and Stockinet.

Our flat machine is adapted for knitting collarettes.

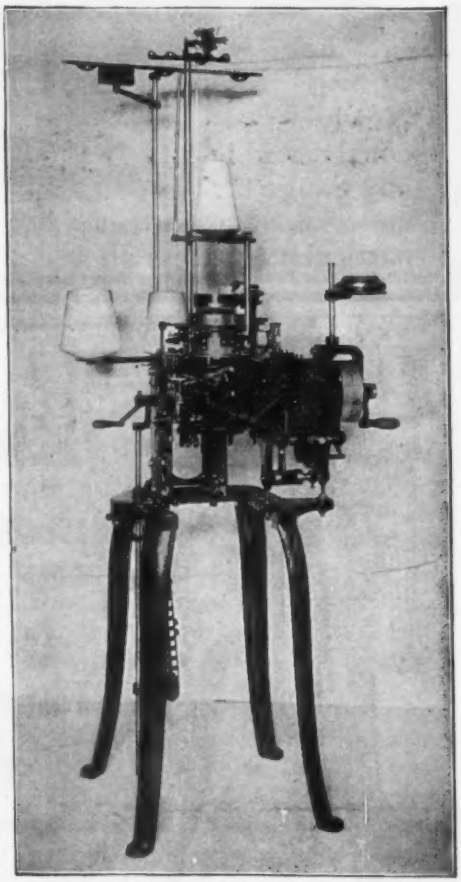
Full Automatic Knitters

For Ladies', Half Hose and Footing, also for

Ladies' Split Sole and Lace Hose

Full Fashioned Legger and Heeler for Full Fashioned Hose.

Measure lengths like a Rib Frame.

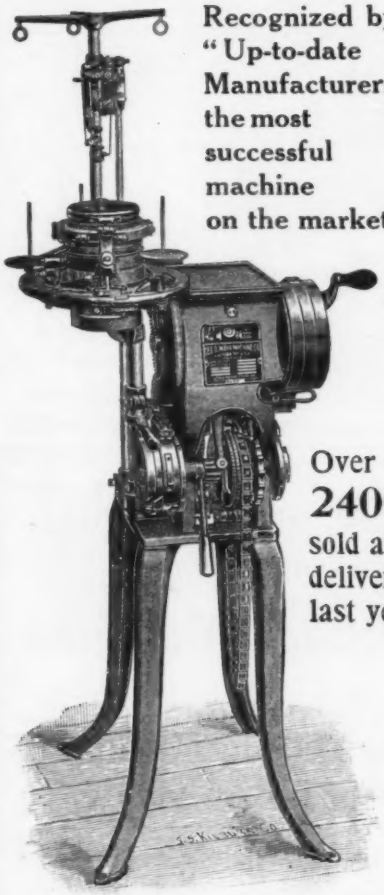


Paxton & O'Neill

537-41 North Third Street, Philadelphia.

"Mayo's New Model A"

FULL
Automatic Knitter



Recognized by "Up-to-date Manufacturers as the most successful machine on the market.

Over **2400** sold and delivered last year

Write us for particulars and prices

Geo. D. Mayo Machine Co.

Laconia, N. H., U. S. A.

Philadelphia Showrooms, Knickerbocker Bldg., Cor. Sixth and Arch Sts.

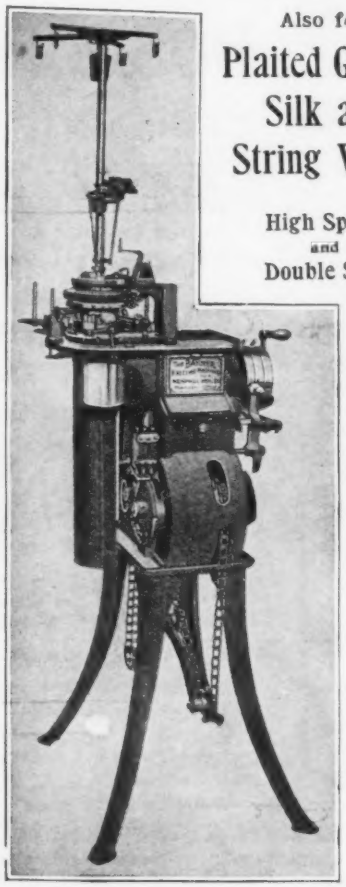
"THE BANNER"

Hemphill's Latest

FULL AUTOMATIC MACHINES

BUILT FOR EITHER PLAIN OR SPLIT FOOT WORK, SINGLE OR DOUBLE FEED

Adapted to Manufacture Hose with Linen or Mercerized heel or toe



Also for

Plaited Goods, Silk and String Work

High Splice and Double Sole

Five Superior Points:

Largest Production

More Yarn Changes

Highest Speed

Simplest

Least Repairs

Produces a Superior Quality of Work.

Hemphill Mfg. Co.

131 Clay Street - PAWTUCKET, R. I.

MEYERCORD GOLD STAMPS

FOR ALL GRADES OF

HOSIERY

That retail for 25c and up, our stamp is suitable for silk, mercerized and any surface that has no loose nap.

ALSO

Suitable for Marking Silk Neckwear, Fascinators, Ribbons, Umbrellas, Silk Skirts, etc.

No manufacturer should overlook the chance to have his trade-mark or name on every article or garment he turns out.

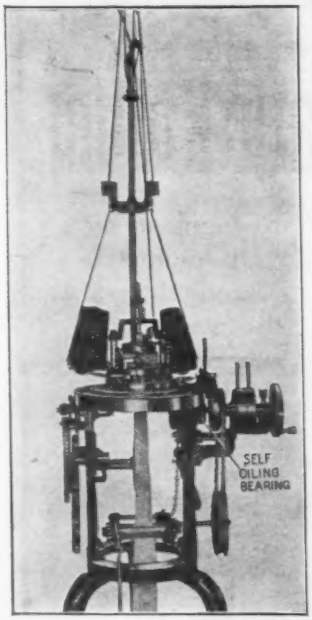
Process is simple, rapid and clean, requiring no machinery.

Samples and details on request to interested parties.

The Meyercord Co.

Western Office, Chicago, Ills.
Eastern Office, Philadelphia, Pa.

Reciprocity or Annexation, Which?



It is not for us to answer for you the above question, nor shall we undertake to decide whether or not RUSSIA has the right to make a DEMONSTRATION against CHINA; This NOTICE is to "point-you-the-way" to the place where you can secure without any question, the very latest up-to-date RIBBERS, STOP-MOTIONS and Hosiery making accessories at prices SURPRISINGLY low compared with the make up and production of the machines. The very latest HATCH from our SETTINGS is a RIBBER which produces the long-sought FABRIC for the GLOVE manufacturer. WRITE today for particulars. Your PATENTABLE ideas developed and MODELS constructed. EVERYTHING the very latest.

General Machine Works
Box "R"
YORK, PENN.

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Acme Knitting Machine & Needle Company

Franklin, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers like our Latch Needles

because we make a superior grade of needles.

Philadelphia Office, Knickerbocker Bldg.

JAMES TAYLOR, 121 Arch Street Philadelphia, Pa.

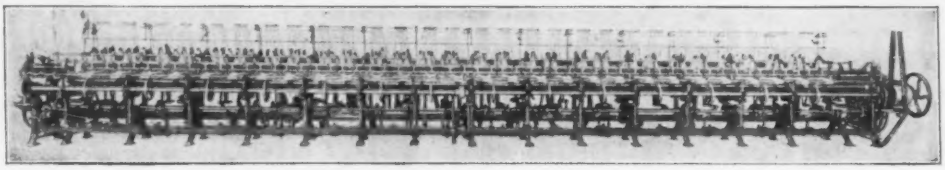
ALL KINDS OF NEW AND SECOND HAND **KNITTING MACHINERY**

A RARE OPPORTUNITY TO BUY

10 Lamb & Grosser Sweater Machines.
56 National Knitters 3¾″, 216 Needles.
40 National Knitters 3½″, 200 Needles.
54 Standard "B" Knitters for sizes.
24 Mayo "Acme" " " "
2 Double Ribb Machines.
7 Latest Improved Necktie Machines.
1 Crane Style Collarette Machine 20″, 16 to in.
1 Rotary Fire Pump. 3 Small Pumps.
2 Toque Machines.
4 Hosiery Dryers.
4 Cornely Hosiery Embroidery Machines.
500 Dozen Hosiery Shaping Boards.
1 Caligraph Typewriter.
1 5 h. p. General Electric Motor, 3 phase.
1 ½ h. p. Electric Motor.
1 Singer Nat. Button-hole Machine.
500 Payne Winder Bobbins.
100 ¾ Aut. Knitters, various makes and sizes.
1 Payne 40 Spindle Cop Winder.
1 Abel 36 Spindle Cop Winder.
1 Union Special Overlock, Style 15.400.
5 Climax High Speed Motions for Ribbers.
1 Underwear Mangle.
1 Cleveland 42″ Extractor, belt driven.
1 Merrow No. 60.
1 Crawford 17 Plate Press.
1 Pownall Screw Press, 34 x 52″.
5 Band Folding and Cutting Machines.
1 Curtis & Marble Napper, 66″.
1 McCreary Napper, 60″, 16 Rolls.
8 Jones Fleecers, 24x36″.
1 Wagon Scale.
2 Singeing Machines.
1 Hosiery Printing Press.
4 Hosiery Lever Presses.
42 Union Spec. Sewing Machines, various styles
50 Loopers and Seamers, all makes.
60 Ribbed Underwear Machines.
100 Hosiery Ribbers and Sleevers.

WRITE FOR COMPLETE LIST. APPRAISEMENTS A SPECIALTY

We are always in the market to buy good Second-Hand Knitting and Finishing Machinery.



H. ALBAN LUDWIG

CHEMNITZ, SAXONY

MANUFACTURER OF THE FAMOUS

Ludwig's Full Fashioned Hosiery Machines

(Cotton's System)

Special Important Features { **Pat. Divided Narrowing Machine** / **Pat. Internal Cam-Movement** / **Movable Striking-Off Combs**

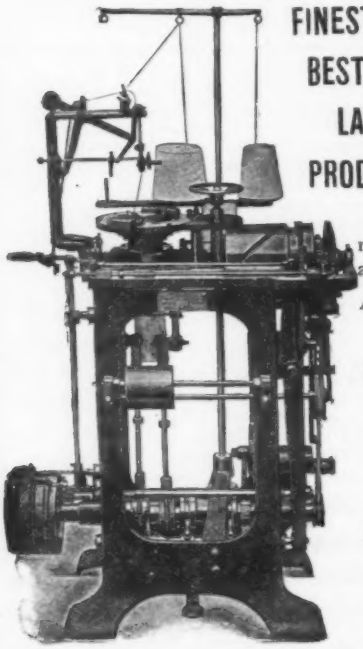
Rib-Top Machines (Ludwig's High System, Cotton's System)

LOUIS HIRSCH, Representative for U. S.

260-262 W. Broadway, - - - - NEW YORK

"NATIONAL"

Stands for



FINEST GAUGES
BEST FABRIC
LARGEST
PRODUCT ON

Greatest Variety of Laces and Novelties.

Allautomatic.

Lowest Cost for Operating

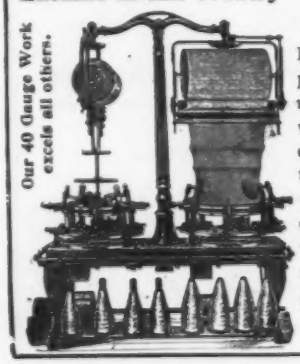
Also Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

NATIONAL AUTOMATIC KNITTER CO.

1028 Susquehanna Avenue, PHILADELPHIA, PA.

We are the Oldest Manufacturers

of this Design of Spring Needle Knitting Machine in this Country



40 years' experience

Do not be misled by people who became manufacturers in 1903 without any previous experience who are trying to represent that they are the oldest manufacturers. Investigate. Call and see our fine gauge work.

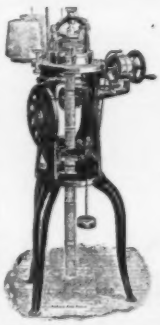
Robt. W. Gormly & Co.
Troy, N. Y.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
Cor. Elm and Reed Sts., Reading, Pa.



New Branson Automatic Ribber

Branson, Rib Top Cutters, Semi-Auto. and 15/16 Auto. Knitters up to 200 Needles.

Our mantle machines are the leaders. Positively the best made.

Open top shirt machines.
Needles and Cylinder Bands, Etc.

New Branson Knitting Machine Co.
Mascher & Lehigh Ave., Phila., Pa.

The M. Q. S. Mfg. Co. Sheet Metal Pressings

Slides, Sinkers, Needle Jacks, Dividers, Silk Sinkers, Burr Blades, Nosings, Thin Head Sinkers, Web Holders, etc., made to order.

Correspondence Solicited.

P. O. Box 426
New Brunswick, N. J.

A BRAND LABEL ATTACHED TO YOUR PRODUCT is the official seal of your approval, and shows that you are proud enough of your work to acknowledge it.

Our pointed staple stitcher makes its own staple from a spool of very fine wire, the points of which are so sharp, they may be placed through the most delicate fabric without injury.

An average output of from 250 to 500 dozen pieces per day explains why so many large manufacturers use our machines exclusively.

May we give you more information?

CHARLES BECK COMPANY

609 Chestnut Street, PHILADELPHIA

BELTED—STEAM—ELECTRIC

Hundreds in Service **HYDRO** Write for Circulars

EXTRACTORS

—THE KIND FOR HARD SERVICE—

DIENELT & EISENHARDT, Inc.

Howard and Thompson Sts.

PHILADELPHIA

CASE BROTHERS

INCORPORATED

Highland Park, Conn.

Manufacturers of

RAG PRESS BOARDS

Especially Adapted to **Hot Pressing**

Also **Fender Boards**

Medals awarded at Paris and Melbourne Expositions.

Jacquard Cards

of all Grades for Fancy Weaving. Accurately Cut to Any Size.

STANDARD MACHINES FOR HOSIERY MAKING

The STANDARD F, with attachments, can make any and all of these fabrics:

Plain Goods
Plaited Work
Three Color Stripes
Tipped Heel and Toe
White Foot
Changed Heel and Toe
Garter Top
Loopers Slack Course

Most Stockings—Best Fabrics—Longest Life

Standard Machine Company

OFFICE AND SHOW ROOMS

330-348 North 12th St., Philadelphia

We Are the Oldest Manufacturers

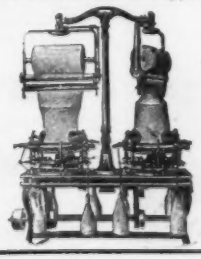
IN THE WESTERN HEMISPHERE

Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

Cross Question 123. How long have you been a manufacturer of knitting machines? Answer. I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLY Was born, according to his testimony in the case above cited.

The LAMB

LEADER OF KNITTERS

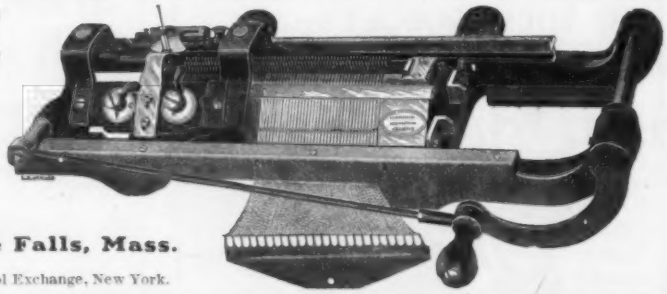
Original and Still the Best

Most widely used; being operated in every civilized country.

Our Collarette Knitter Knits almost any conceivable style and with selvage ends.

Circular Rib Top and Seaming Machines.

Send for Prices and Catalog.



LAMB
Knitting Machine
COMPANY,

P. O. Box 5888, **Chicopee Falls, Mass.**

J. E. Woodhead, 124 East 22d St., Chicago.
L. D. Sanborn, Room 513 Wool Exchange, New York.

Pipe Loading Machine for Roll Turner or Horizontal Dryer.

Jordan Patent Pipe Loading Machines

Machines will earn their cost in LABOR ALONE in from 3 to 6 months.

This device will deposit an average size roll onto the tube in 30 seconds.

MACHINES SOLD ON TEN DAYS TRIAL

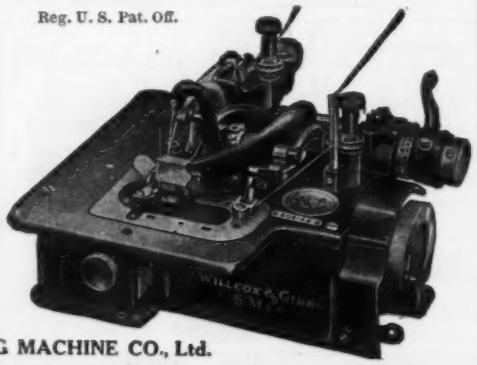
We also build a Portable Electrically Driven Machine for Loading Vertical Drying Pipes.

JORDAN MACHINE CO.
Incorporated
5 Factory Street, - - - - Cohoes, N. Y.

The Willcox & Gibbs "OVERLOCK" Machine

for the High Standard of SEAMING *in one operation*, also for OVEREDGING, and HEMMING of **KNIT UNDERWEAR** and **HOSIERY**, when ECONOMY and EXCELLENCE of finish are carefully studied.

Reg. U. S. Pat. Off.



For SALE or RENT

Trade-Mark Reg. U. S. Pat. Off.

3,000 Perfect Stitches Per Minute where factory conditions permit.

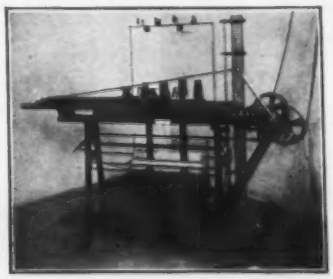
WILLCOX & GIBBS SEWING MACHINE CO.

Chief Office,
658 BROADWAY, New York, N. Y.

Business Estab. in 1859

WILLCOX & GIBBS SEWING MACHINE CO., Ltd.

LONDON PARIS NOTTINGHAM DRESDEN BRUSSELS MILAN



AUGUST RIEFFEL

39-41 Ashmead St., Germantown, Philadelphia

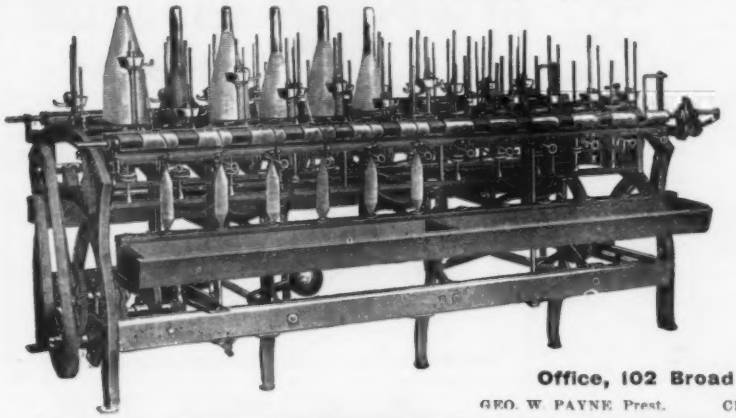
Manufacturer of

Flat German Knitting Machines
OF ALL DESCRIPTIONS
AND
High Grade Improved Changeable Color Necktie Machinery

For Flat or Tubular Fabrics. General Repairing, changing needle beds and hand machines to power, either plain or automatic. Parts and needles always on hand for prompt shipment.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers,
Wind for Cop, Skein or Bobbin.



Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

GEO. W. PAYNE CO.,

(Est. 1865. Inc. 1903.)

Office, 102 Broad Street, Pawtucket, R. I.

GEO. W. PAYNE Prest. CLINTON F. PAYNE, Sec'y. and Treas.

We Lead in the Industry of Knitting Machines.

130,000 Knitting Machines in use all over the Universe

CLAES & FLENTJE

Mühlhausen Thr., Germany

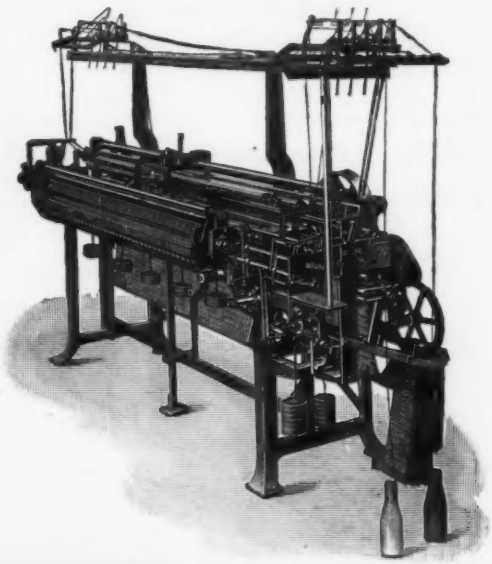
(Largest Knitting Machine Factory in the World)

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

The cut represents our newly patented fully automatic left and left power machine for producing fancy stitches that formerly could only be produced by hand.

For full particulars, needles and supplies for all kinds of knitting machines, write to



Ainslie Knitting Machine Co.
281 Ainslie Street, Brooklyn, N. Y.

Drying Forms.

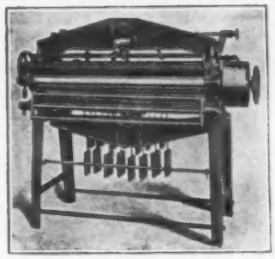
BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

Hosiery Boards.



The "1912" Cloth Cutting Folding and Winding Machine.

This machine will cut down operating expenses. It does in one operation the work which is now being done in two. It cuts the cloth, folds the edges and rolls them up in one operation, and at all times gets one more strip out of a bolt of cloth than is possible with the old method of cutting. At the same time it measures the bolt of cloth to show the manufacturer whether or not he is getting the number of yards he is paying for. With the high price of cotton to-day every knit goods manufacturer ought to look into this to see if he is getting the maximum efficiency at the least expense. You will find when you come to figure it up in the course of a year that the labor it saves is a big item.

Also have other labor-saving devices, and upon application you can get prices and full information on same.

Joseph A. Firsching, 22-28 John Street Utica, N. Y., U. S. A.

New Jersey Wire Stitcher

Highest Grade

Machine for Rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Send for Catalogue.

J. L. Shoemaker & Co.
15 S. Sixth Street
PHILADELPHIA

HEPWORTH & CO.'S

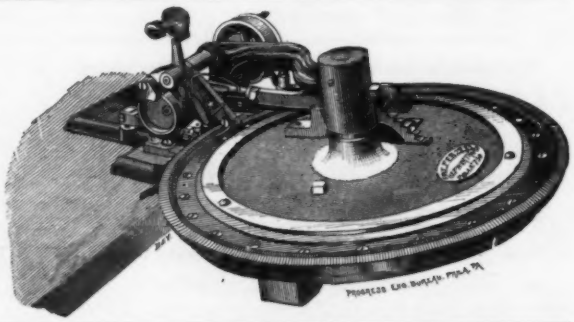
Patent Single-Stitch

Looping Machine

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch or Both Combined.

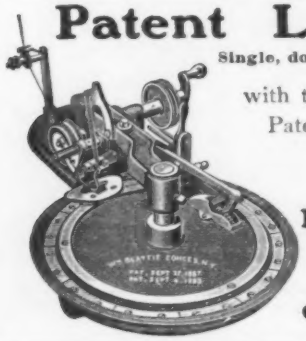
JOHN W. HEPWORTH & CO.,
N. W. Cor. Lehigh Ave. and Mascher St.
PHILADELPHIA.



Patent Loopers

Single, double and two thread Stitch.

with the
Patent Raised
or
Straight Points.



Beattie Manufacturing Co.,
Cohoes, N. Y.

The CRAWFORD

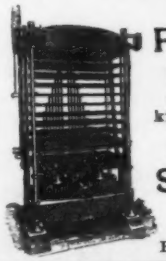
HOLLOW STEAM
PLATE PRESS

For Knit or Woolen Goods

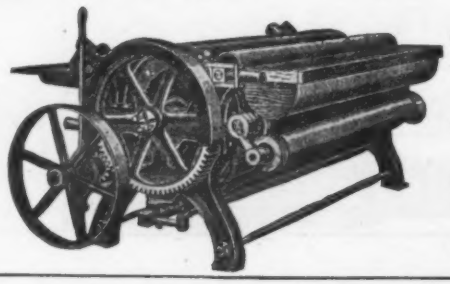
The most reliable machine of the kind on the market.

PRESS PAPERS and FENDERS

SPENCE & RIDEOUT
Successors to
J. J. CRAWFORD & SON
Established 1868 NASHUA, N.H.



Automatic Ironing and Pressing Machine Reduces Finishing Expenses 50%



In comparison with other machines (for use on knit goods, ribbed, flat and fleeced lined underwear) this machine will save you 50% through increased production and decreased expenses of your **Finishing Department.**

BREAKS NO BUTTONS.

It is adjustable to all grades, and gives a finer finish than that obtained on any other machine.

Capacity of smallest size 600 dozen per day.

Write for details and references.

The Consolidated H. S. & L. M. Company
Saugatuck, Conn.

Sole Manufacturers and owners of all rights, patterns and patents of the J. W. Craw Laundry Machinery Co.

Currier Needle Co.

Manchester, N. H.

Latch Needles

for all makes of machines.

Investigate our

Lock Back Shank and Superior Rivet

WM. COREY CO.,

Manufacturers of Knitting Machine

Latch Needles

MANCHESTER, N. H.

EXCELSIOR NEEDLES.

The best Hosiery Needles in the market.

Manufactured by

WARDWELL NEEDLE CO., Lakeport, N. H.

KEYSTONE LATCH NEEDLE CO

JOHN C EGLY, Mgr.

MANUFACTURERS OF

Patent and Regular Latch Needles

Needles for all makes of Knitters and Ribbers.
Keystone Spring Bottom Needles for all makes of Knitting Machines always in stock for immediate delivery.
Special Needles made to order.

543 W. Lehigh Avenue, Philadelphia, Pa.

Standard Latch Needles

MANUFACTURED BY

EXCELSIOR NEEDLE CO.,

TORRINGTON, CONN.

The Largest Manufacturers of Machine Needles in the World.

STANDARD

TRADE MARK.

Longer Wear. Better Work.

Less Mending. Fewer Seconds.

Have you tried our

Patent Milled Rivet?

Agents

C. B. Barker & Co., Ltd., 42 W. 15th St., New York.
Manufacturers' Supplies Co., 418 Arch St., Phila.
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Manufacturers of all kinds of

SPRING KNITTING NEEDLES

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MANUFACTURERS OF

Spring Knitting Needles

AND BURR BLADES OF ALL KINDS

AMSTERDAM, N. Y.

The Continental Latch Needle Company.

Manufacturers of the BEST GERMAN NEEDLE on the Market.

RIVETS GUARANTEED. Samples on application. SPRING NEEDLES A SPECIALTY.

120-122 LIBERTY STREET, - - - - - - - - - NEW YORK.

WILLIAM C. BULL, BENNINGTON, VERMONT.

MAKER OF

For Ladies', Gents' and Children's Goods.

Latest Styles.

Best Workmanship.

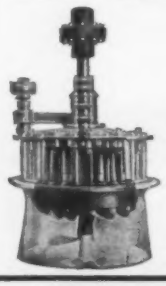
Drying Form Boards

OF EVERY VARIETY.

THE SAMSON TURBINE WATER WHEEL

AND WHY IT IS BEST IN

POWER, SPEED AND ECONOMY



The Leffel Wheel, now developed into the Improved Samson Turbine, will continue to maintain, as it has for the past 49 years, its superiority because of features that give it wonderful power and high velocity, economy in the use of water, and an unusual steadiness of motion under variable gateage.

These are points of merit established by scientific and experimental tests.

Send for catalog illustrating and describing the different types and proving their merit

The James Leffel & Co.

502 Lagonda St. - - - Springfield, Ohio

The WOODWARD In

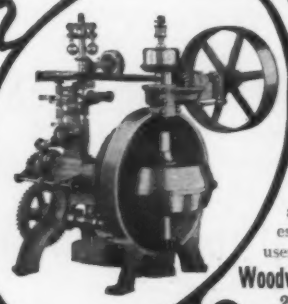
WATER WHEEL GOVERNOR

ILLINOIS

"SIX YEARS WITHOUT A BIT OF TROUBLE."

"After six years' constant service, without a bit of trouble, our governor is still in excellent condition," writes the Bennett Milling Co., Geneva, Ills. There is scarcely an hour when the load is the same, yet the **Woodward** works so quickly the change is scarcely noticed. We wish you the success true merit deserves, for the **Woodward** is

"CERTAINLY A WONDER"



Watch for more of these enthusiastic letters. We get them from all over the U. S. and foreign countries. If you are figuring on a governor, let us figure with you.

Send for Catalog and

FREE

Subscription

to Power Control a magazine of interest to all water power users.

Woodward Governor Co.

204 Mill St.,

ROCKFORD, ILL., U.S.A.

HEINE WATER TUBE BOILERS

Are as admirably adapted for use in the textile field as in every other where high pressure steam is wanted.

HEINE SAFETY BOILER CO.

ST. LOUIS, MO.

BOSTON NEW YORK PHILADELPHIA

C-W

engineers have been solving motor-drive problems since 1888. See Bulletin 126Y on Crocker-Wheeler induction motors adapted to textile mill service.

C-W *Induction Motor*

CROCKER-WHEELER COMPANY

Ampere, N. J., Baltimore, Boston, Birmingham, Newark, and all principal cities

SMITH & FURBUSH MACHINE CO.

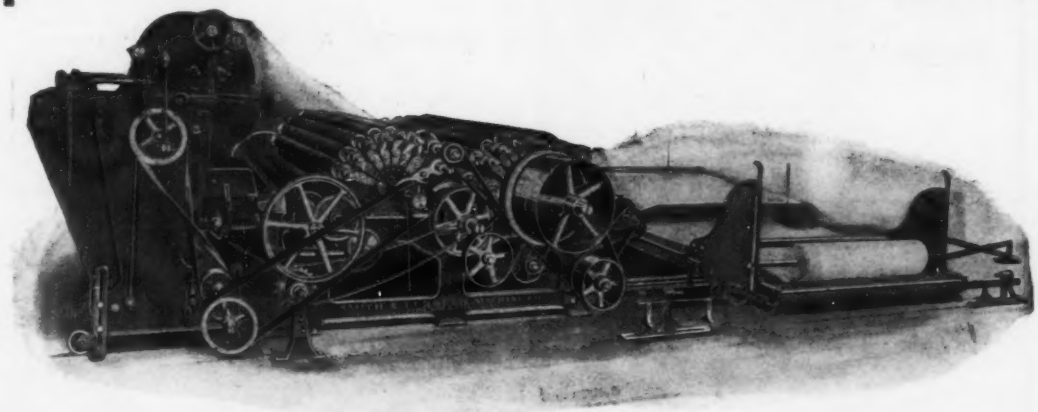
Hancock and Somerset Sts. Philadelphia, Pa.

BATT AND FELT MACHINERY. CIRCULAR No. 53A

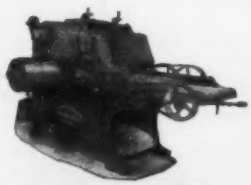
Square Box Willow Duster and Blender.

These illustrations show various equipment for Manufacturing FELTS.

Cone Willow Duster and Blender.



Automatic Feed. **Carnett Machine.** **Blamire Lapper.**



Waste, Rag or Shoddy Picker.

We build a very complete line of machinery for manufacturing Cotton or Wool Felts for Matresses, Comforts, etc., also for small rolls of Commercial Batting and Absorbent Cotton.

Special Cotton Picker.

Write for Circular No. 53A.

We invite visitors to Philadelphia, to see our Machinery in operation.

SMITH & FURBUSH MACHINE CO.,

Philadelphia, Pa.

MANUFACTURERS OF

CARDS { Woolen, Worsted, Cotton Waste and Shoddy Cards.

FEEDS { Self Feeds for wool, worsted, cotton, or jute, also Camel Backs, Blamires, and Apperlys for Cards.

METALLIC BREASTS { Burring Machines and Self-Stripping Feed Rolls for Cards and Garnett Machines.

GARNETT MACHINES { For carding cotton and woolen waste clippings, etc., also for manufacturing batting or felts for Comforts and Mattresses.

PICKERS { Lumpers; Rag and Carpet Shredders; Rag, Burr, Wool and Fearnaught Pickers.

WILLOWS { Square Box and Cone Willows and Dusters.

MULES { Heavy and Durable, for Wool and Waste Yarn.

TWISTERS { Plain and Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS { Automatic Jack Bobbin Builders; Adjustable Creels for different length spools.

WARPING MACHINERY { Copper Cylinder Warp Dressers with single and double size pans; Beamers; Section Warp Mills; Warp Mills; Dresser Spoolers for worsted or wool.

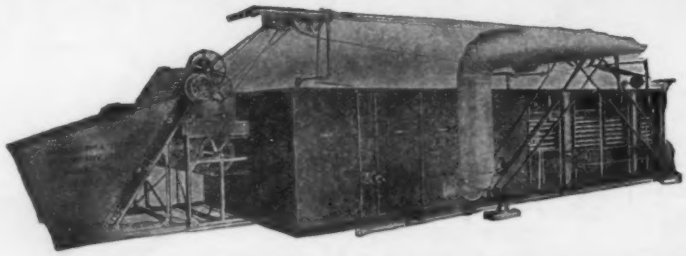
GRINDERS { Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers.

Machinery for Manufacturing Rewoven Bagging from Old Gunny Bagging.

SPECIAL CIRCULARS FURNISHED FOR EACH MACHINE.

Look on the Other Side of This Page.

Proctor **Drying Machines** *Fire Proof*



Yarn Dryers
Scouring Machines
Fans

BUILT of METAL

Stock Dryers
Carbonizers
Hosiery Dryers

Apron troubles overcome by the Interlocking Chain Conveyor

It needs no adjustment

Address Dept. E.

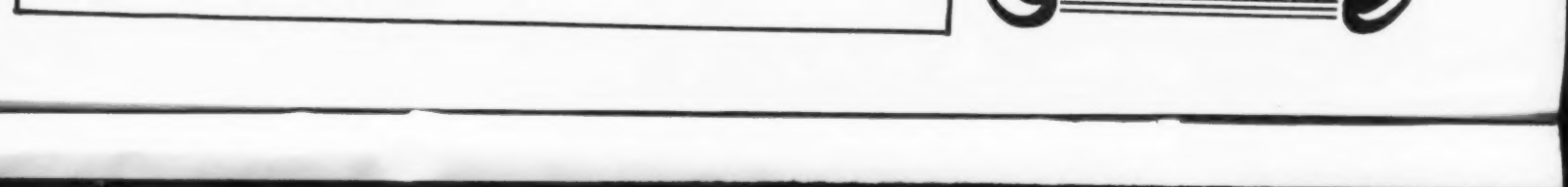
Conveyor Separate from Dryer

Philadelphia Textile Machinery Company

Hancock and Somerset Streets **PHILADELPHIA, PA.**

Southern Representative, H. G. MAYER, 1212 Realty Bldg., Charlotte, N. C.

LE Ap 12



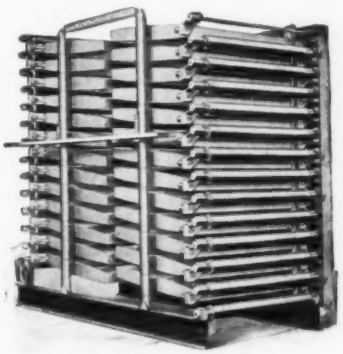
Cell Drier "repeat" orders speak for themselves

List No. 5

This is the fifth of a long series of lists of repeat orders. Send for the others, latest bulletin, etc.

A Massachusetts company, the name and address of which will be given on request, is now operating two Cell Driers of large capacity, as indicated below. One has been in constant use about six years, the other about two years.

Last month (March) we sold and shipped a twenty-four Cell Drier to another plant in which the first customer is interested, the order being placed on his recommendation.



Perhaps you could use the Cell Drier to equal advantage.

Cell Drier Machine Company

Boston Office,
147 Milk Street

Taunton, Mass.

Have the Proper Speed Control in Your Textile Mill

Don't drag along another day in an inefficient way. Get in touch with

"The Reeves" Variable Speed Transmissions

that give all speeds between the two extremes—On the ceiling out of the way but always on the job.

A money saver—Learn why. Write for detailed facts. Know how we are saving TEXTILE MANUFACTURERS thousands of dollars annually.

REEVES PULLEY COMPANY - COLUMBUS. IND.

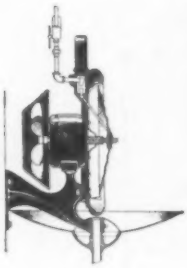
Foster Machine Company

Builders of

Cone and Tube Winders

Office and Works at

Westfield, - Massachusetts



Hygrosso Humidifiers

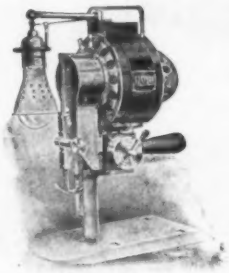
(Patented)

John W. Fries
Winston-Salem,
N. C.

Agents for the New England States:
R. I. SUPPLY & ENGINEERING CO.
156 W. Exchange St., Providence, R. I.
Oliver Building, Boston, Mass.

Agents for the Middle States:
FRANCIS BROS. & JELLETT
315 N. 15th St., Phila., Pa.
156 Fifth Avenue, New York

Southern Representative:
JOHN E. SCHOTT
Stonewall Hotel, Charlotte, N. C.



Arm holes and necks are now no problem. The "EASTMAN" has this problem solved.

Write us to-day for how we save you money.

Send for Catalog.

Eastman Machine Co.

BUFFALO, N. Y

NEW YORK 186 Lafayette St. CHICAGO 237 Market St. PHILADELPHIA 328 The Bourse. BALTIMORE 10 S. Howard St.

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

"Walmanco" Pipe Flanges
"Never Stick" Blow-off Cocks, Mill Supplies.

GENERAL OFFICES:
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